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Cosmetics Detrimental to Vision*

Walter I. Lillie, M.D.

THE increasing number of eye tragedies occurring as a result of the indiscriminate use of weight reducers, hair dyes and depilatories presents a problem to the doctor, the lawyer and the public, as well as to the beautician

INDIVIDUALS who use cosmetics are unwittingly subjecting themselves to visual dangers. We are all potential victims, because the present antiquated Food and Drug Act, passed in 1906, only requires the manufacturers of food and drugs to properly label their products but does not penalize the acts of adulteration and misbranding. False and fraudulent therapeutic claims must be proven before the product can be removed from the market. These two little words "and fraudulent" compel the Government to prove that the manufacturer knows the customer is being swindled. This has prevented any adequate control over quack or dangerous remedies. Extraneous advertising of these products through the newspapers, magazines and radio is without Federal control, and because of this we are constantly reminded of the wonderful benefits and cures that will be derived from their use.

Today the billion-dollar-a-year cosmetic industry is not subject to any Federal regulations unless the labels bear medicinal claims, which, of course, never occurs. There is no legal way to protect the public against dangerous cosmetics. Toilet preparations which are known to be harmful by the medical profession cannot be taken off the market regardless of any disfigurement or injury they may inflict. Although poisonous cosmetics that ravage their users by paralyzing, blinding or disfiguring them are the exception rather than the rule, the medical profession should be alert to the possibilities and probabilities of visual and bodily damage which may result from their use.

*Presented at the Eye Section of the Philadelphia County Medical Society, May 7, 1936.

The untoward visual effects may be temporary or permanent, depending upon the nature of the ingredient or the amount used, and the tolerance of the individual. The eyes are usually affected in one of two ways, either through direct contact with the preparation or indirectly through the absorption of the poisonous ingredient in the body.

Three groups of cosmetics have the potentiality of producing severe ocular damage, namely: (1) weight-reducing preparations, (2) hair dyes, and (3) depilatory ointments.

Weight Reducers

Preparations used for weight reduction usually contain either thyroid extract or dinitrophenol. The proprietary preparations "Marmola" and "Ringo Fruit," and others, contain thyroid extract which is usually combined with a high iodine preparation or a laxative. These are taken internally, and activate the body chiefly through stimulation of the thyroid gland. This gland may become so activated that ocular difficulties arise similar to those so frequently seen in patients suffering from a toxic or exophthalmic goitre. The eyes may become prominent and protrude between the eyelids. The exposure causes a congestion of the conjunctiva; this may progress to a conjunctivitis or an ulceration of the cornea. Corneal ulcers that do not respond readily to treatment may progress practically to complete destruction of the tissue, with an end-result of either dense corneal scars which disfigure the eye and greatly diminish vision, or a rupture of the eyeball Victims affected in a milder manner may have permanently protruding eyes, which are disfiguring and may develop after discontinuing the use of the drug. The following case is an example:

A female, aged 34 years, began using thyroid extract and Jad Salts in 1929 to reduce her weight, which had increased from 118 pounds to 173 pounds. This procedure was continued until January, 1935, with a reduction of weight to 120 pounds. At this time she became very nervous and developed a marked tremor of the hands and a rapid heart. The eyes became slightly more prominent, and her physician made a diagnosis of exophthalmic goitre. No improvement was obtained with Lugol's solution, and in February, 1935, the goitre was removed. The patient's general health improved following the operation, but her eyes rapidly became

more prominent, congested and painful. My first examination, in May, 1935, revealed an exophthalmos of 28 mm. of the right eye and 27 mm. of the left eye. The conjunctivae were congested, but the corneae were clear except for a slight roughening on the lower portion of each. Ocular rotations were limited in all directions. A Naffziger operation was advised and refused, so a medical régime of Lugol's solution was instituted elsewhere. Again, in August, 1935, my examination revealed the exophthalmos had increased 5 mm. in each eye, with inability of the upper lids to completely cover the corneae, even when forcefully closed. A Naffziger operation was advised and at this time consent was easily obtained. A bilateral removal of the orbital roof and superior wall of the optic canal was performed by Dr. Fay in August, 1935. Since then it has been necessary to do a bilateral blepharorrhaphy on three separate occasions, without much success. Her convalescence has been extremely slow, and at the present time the right cornea is entirely opaque while that in the left eye is clear in the upper half only. The exophthalmos has gradually receded to 27 mm. in the right eye and 26 mm. in the left eye. The upper lids now cover the corneae with ease, but the patient is still confined in the hospital.

Needless to say, it is an extremely sad story, and the end-result from a cosmetic and visual standpoint will be very poor. It is an exorbitant price for the loss of 53 pounds of weight.

Dinitrophenol has been known as a dye for a hundred years, and respected as a poison for more than thirty. During the War it was used in the manufacture of explosives and was investigated because the munition workers developed headaches, nausea, high fever and rapid loss of weight. When taken internally it also produces copious perspiration, warmth, hives and impairment of taste. It may damage the kidneys and heart. It is the deadliest of all coal-tar preparations and is toxic to everyone. Even when dinitrophenol is used in very small therapeutic doses it has a tendency gradually to produce opacities of the crystalline lens, and its continued use will produce cataracts. Interestingly enough, the opacities of the crystalline lens usually develop during the second course of treatment rather than the first. The victims will notice a gradual but progressive blurring of vision, which is not associated with any inflammation or discomfort in the eyes. These changes occur regardless of the age of the individual, but the younger group is more frequently affected. Glasses, as a rule, will not improve the

vision, and the surgical removal of the cataracts is necessary before good vision can be restored. The following case is an example:

A female, aged 45, began using dinitrophenol in March, 1934, because of excessive weight. She continued this treatment until September, 1934, stopping when she had lost 50 pounds. She again started its use in June, 1935, as the weight regained was annoying. This treatment was continued until September, 1935. During this second period of treatment the patient noticed "spots" before her eyes, and the vision gradually failed. My examination in February, 1936, revealed the vision in the right eye to be 6/30 while in the left eye there was only an ability to count fingers, which improved to 6/15 in the right eye and 6/30 in the left eye with glasses. The ophthalmoscopic and slit-lamp examination revealed numerous discrete white crystalline deposits in all portions of the lens of each eye, being more diffuse in the left eye. Undoubtedly, surgery will be necessary to restore useful vision.

Again, the price of 50 pounds loss in weight seems rather high, especially when a permanency of reduction is not guaranteed.

The numerous products on the market which contain dinitrophenol are variously named: "Nitromet," "Nitraphen," "Tabolin," "Redusols," "Formula 281," "Nox-Ben-01," "Aldinol," "Formula 17," "Slim," "Dinitrolac," "Dinitroso (Dinitrose)," "Dinitrenal," "Dinitrole," and others.

Hair Dyes

Cosmetics such as "Lash-Lure," "Inecto," "Inecto Rapid Notox," and similar products contain a synthetic anilin dye or an amino-compound which is used to dye the eyebrows and eyelashes. This amino-compound acts as a caustic when it comes in contact with the eyes. The victim notices severe smarting of the eyes, which soon become quite irritated, and the burning sensation spreads over the face and forehead. The lids become swollen and difficult to open, the pain is unbearable, and the usual household remedies give no relief. A watery and mucoid discharge from the eyes becomes diffuse, and the cornea usually ulcerates. These corneal ulcers may be deep enough to rupture the eyeball, or may only produce opaque white scars which decrease the vision markedly. If the eyeball ruptures, it has to be removed surgically because of infection. Even though the victim is hospitalized and

placed under expert care, the usual end-result in severe cases is a permanent diminution or complete loss of vision. The following case is a mild example:

A female, aged 39, following the use of "Lash-Lure" in a beauty shop, came immediately to the Temple University in March, 1935, because of severe lacrimation, congestion and pain in both eyes. The examination revealed a marked congestion of the palpebral and bulbar conjunctiva, with chemosis of the latter. The corneae were clear and did not stain with fluorescein. The pain was very severe, and could be relieved only with narcotics. After a ten-day stay in the hospital, the patient continued as a dispensary patient for about one month before the eyes returned to a normal condition. Her vision, fortunately, was unaffected.

Although this is a rather mild case, the patient was fortunate in that the corneae were not involved. Even though mild, she was incapacitated for about six weeks. This again demonstrates that the cost is too high for the cosmetic results obtained and the dangers to which one is unwittingly subjected.

Cosmetics such as "Kolor Bak" and similar products are used as hair dyes and contain a heavy metal, generally lead, mercury or silver. The absorption of the heavy metal may produce a retrobulbar neuritis, usually bilateral. The disturbance of vision is characterized by so gradual a diminution of central vision that the victim is unable to state definitely when the vision really became affected. At first, average-sized type can still be read, but the ability to read gradually fails. Vision at dawn or dusk or on cloudy days is much better than in the bright daylight. The visual symptoms may be accompanied by severe headache or by dull pain in the orbit. The pupils may dilate and respond poorly to stimulation by light. The central fields of vision are affected and the optic nerve may become pale or atrophic. The ability to read or see clearly in the distance greatly diminishes, and glasses will afford no improvement. The development of a permanent atrophy of the optic nerves will depend upon how much and how often the preparations are used. Once the optic nerve fibers are destroyed, no known helpful remedy is available, and dim vision or blindness is permanent. These ocular changes may or may not be associated with the general signs of the disease, namely: cramps,

paralysis of the extremities, loss of hair, blue gums, pigmentation of the skin, et cetera.

Depilatory Creams

An ancient method of removing hair from hides in the making of leather has been responsible for a group of cosmetics harmful to the skin. Lime, combined with the alkaline sulphides, was used centuries ago by the Orientals for removing unwanted human hair. Barium sulphide is sometimes substituted for quicklime in modern depilatories. None of them will remove hair permanently, and most of them irritate a sensitive skin. Years ago Dr. Sabouraud, a French dermatologist, used a one per cent thallium acetate ointment for certain scalp diseases. He found that it caused so many accidents that he discontinued its use, and urged others to be cautious about it. However, Kora M. Lubin, in 1930, seizing upon the formula, manufactured a depilatory ointment containing from 3 to 7 per cent of thallium acetate. She named the product "Koremlu," using parts of her name to make the trade-name, and made it available to the public without a word of warning as to its dangers. As early as 1931 the medical profession began recognizing a clinical syndrome of pain and lameness progressing to paralysis of the lower limbs, associated with visual symptoms which were characteristic of retrobulbar neuritis, produced by the heavy metals, multiple sclerosis and other poisons. In most of the cases after the use of Koremlu was stopped the legs improved, but the visual damage remained permanently. Knowledge of the use of a depilatory cream is sometimes difficult to obtain, as the patient does not associate its use with her physical condition. The observation of the absence of facial hair on an otherwise hairy individual may give the first and only clue as to the etiology. I have previously reported two such cases as a co-author with Dr. Harry L. Parker, formerly of the Mayo Clinic, now Professor of Neurology, University of Dublin.

This brief and incomplete résumé of the untoward visual effects produced by the use of dangerous cosmetics gives you a bird's-eye view of the problem which confronts the medical profession and the Federal Government, and is why we wish to protect the public against the sale and use of these preparations.

A recently published book,* to which I am greatly indebted for material used in this paper, gives the inside story of the Government's fight to protect consumers against dangers to health, life and pocketbook. It is dedicated to a large number of women, representing many organizations, who have been holding the front-line trenches in the consumers' war for pure food, drugs and cosmetics. It contains the essential data, both pro and con, to thoroughly convince you that a new Federal food and drug act is absolutely necessary for this protection. It is a good book to have available as a reference book for doctors as well as patients.

The present administration has asked for a new food and drug act which will give consumers better protection than the present antiquated pure food law affords. The officials of the Department of Agriculture have drafted the Copeland Bill (erroneously called the Tugwell Bill), which is proposed in the interest of the public and the honest manufacturer. This act is to afford Federal control of the manufacturing, labeling, selling, advertising and shipping of prepared foods, drugs and cosmetics. This bill is actively supported by the American Medical Association, American Federation of Labor, The National Congress of Parents and Teachers, and eleven other national women's organizations. A powerful opposition lobby has been organized and is sponsored by The Proprietary Association of America and numerous allied groups. Their apparent aim is to keep the present inadequate Federal regulations unchanged, and so far their efforts have delayed constructive legislative action.

A new law must be passed to insure the public of a deserved protection. We as individuals and as members of medical organizations should put forth every effort to obtain adequate legislation against the promiscuous sale and use of poisonous foods, drugs and cosmetics.

* Lamb, Ruth deForest: *American Chamber of Horrors.* Farrar and Rinehart.

Sight Conservation as an Educational Problem*

Richard S. French, Ph.D.

MORE than ever, educators are using motion pictures, slides and other visual aids in carrying out their work. This trend alone necessitates an added interest in a school eye health program

Importance of Sight

Various estimates have been made as to the percentages of impressions coming from the outside world through the different channels of sense. There can be no doubt that sight holds first place, a fairly conservative estimate placing its share at eighty per cent and a bolder estimate at eighty-seven. Whatever the percentage, the fact holds that in the conscious and subconscious life of the person of normal vision there is an infinitude of impressions coming all through the hours of light, natural or artificial, by means of the eyes—direct impressions of light and shade and of color, secondary or inferred impressions of form, distance, movement, emotion, and so on; and, in sleep, the dreams are predominantly visual.

In schools the materials offered are more and more visual. The use of pictures, diagrams and graphs has grown enormously within the last twenty-five years. Illustrations in black and white and in color have improved in quality and in the effectiveness of their appeal. Visual devices—stereoscopes, lantern slides, moving pictures, models—are multiplied year by year and the world becomes more and more visually minded. To take the single example of spelling: this subject even thirty years ago was taught chiefly through spelling aloud; then it was found that the correlation of

* Presented at the meeting of the California Council for the Blind, April 4, 1936.

the oral and auditory faculties with the correct writing of the word was relatively slight, but that the seen word could be correlated with the muscular and visual act of writing, and the oral method dropped into practically complete discard. Spelling bees survive only in state fairs and similar traditional institutions.

So dominant a part does vision play in present-day human living that our psychology has become almost overwhelmingly visual. The old proverb holds truer than ever that "seeing is believing," while we are still cautioned to believe only half what we hear—and the fraction might well be put considerably lower.

In the esthetic life, only three arts fail to make their major appeal to sight, namely, music, poetry and oratory—yet all three are written or printed, and we fall ever deeper into the habit of reading silently both prose and verse—so that music alone remains the art of sound. Painting, sculpture, architecture, landscaping, the arts of home beautification and of floriculture, these not only appeal almost solely to the eyes, but their appeal is enlarged almost from day to day. Sight also means orientation both in our more restricted environments and in the larger world. Dr. Thos. Haines, of the Ohio Board of Administration, has, further, stressed the integrative action of sight—we can grasp wholes only through sight or through a very painstaking and painful mental integration; sound is disjunct for the most part, and also intensive and instantaneous, giving us at best in its nearest approach to wholeness, harmony. The other sense impressions are fragmentary and discontinuous in the extreme.

So important is sight, and the average person looks upon its loss as so complete a calamity, that not until nearly 1750 was it conceived possible to educate a blind person. It was only by the extension of the contact senses, especially touch, and the intensification of auditory instruction, together with the close correlation of auditory and tactual elements, that the education of the totally blind became at all possible. And he would be very bold who would assert that any person totally blind from birth, that is, any person who never has seen and never can see, can have an education comparable with that attainable by a person of normal vision and equal mental endowment; to attain to an identical education is, of course, simply out of the question.

The Seeing Organ

We see normally with two eyes; it is even truer that we see with the body as a whole and with our environment; that is, that sight depends not only on the eyes and the central nervous system but also on position, on muscular control, on where we are and the time of day or night, and on health and bodily and mental tone. The mechanism as mechanism is one of astounding complexity; a Hoe press, man's most intricate mechanical achievement, has a few thousand parts and their harmonious working must be guarded by unceasing vigilance lest a single screw get loose; the eyes and their connections in muscle and nerve tissue involve the interrelation of millions of cell structures, each more complex than a Hoe press, and yet the mechanism has not a single pressman or mechanic to watch over it, and it may run for eighty years without outside intervention or adjustment.

It should be stressed that we really see with our brains and not just our present brains but our own past experience and our ancestral brains as well. The fact that vision is, for good or evil, largely a matter of mentality, is shown in the tests to determine the reliability of witnesses. The average person fails to see many objects present at a given time in a given area; he fails to get the relation of the objects to each other and frequently adds objects that are not there or confuses one object with another. No person can ever be so well trained that he "sees all there is to see." Complete seeing depends then on a very thorough education, which the usual visual instruction utterly fails to give because it fails to take into consideration the visual organ as a whole and appeals only or chiefly to the eyes.

In much of this appeal, even the eyes are not understood. Only recently has the fact of macular vision in the primate eye been studied and properly stressed. G. Elliot Smith was among the first to show how important for intellectual development is the existence of centralized vision in the *macula lutea* and how the clearness and definition made possible by the existence of this super-organ of vision enables its possessor to examine with minuteness and precision what the sub-primate groups see only in a casual and general way. Our own peripheral vision is appealed to chiefly by motion—we cannot examine an object with any degree of

success outside of the focal area. The nature of this kind of vision is shown in the "hush" of all wild things in the presence of a moving terror—the lion, for instance, or man; when the motion ceases, the jungle or swamp or woodland gradually comes back to life again. The stalking of game is another instance in point; it is motion that the deer sees rather than a dog or a man with a gun, and he can be fooled almost completely by the cessation or reduction of motion unless he hears or gets wind of his pursuer. Of almost equal importance in the primates is the fact of binocular vision and the delicate correlation and adjustment of two-eye movements. So-called stereoscopic vision is second in importance only to macular vision; and the human has, in macular and binocular vision and in the brain and experience correlations, a possession so precious that to abuse it is to commit the worst of follies.

Seeing and the Environment

From the evolutionary point of view, sight is a result or product. Certain modified cells in the dermal structure of certain plants and animals have a special sensitivity to light. Response to light follows its special focusing or condensation. From these simple structures and responses it is a far cry to the human eyes but the steps are nearly all present in a graduated series and the stimulus of light is evident in every modification. While the unity and inner self-adjustment of the organism are equally evident, the fact of light as a major factor in the environment is reflected to such an extent that it sometimes looks as if some supreme Light had sketched a perfect pair of eyes and then worked toward them, dropping or discarding the imperfections and the failures along the way. Further, the many-sided influence of light almost justifies the expression, "If thine eye be single, thy whole body is full of light." Dr. Haines traces alertness largely to light stimulus. Without light the world is narrowed to a sphere six feet in diameter, the world of immediate contacts, for sound gives us little impression of distance or direction, smell still less; and sight, hearing, and smell are the only distance ceptors (Crile). With light our environment becomes virtually unlimited in the space-time continuum: light makes possible the perception of bodies a hundred million light years distant—the new 200 inch telescope will extend the range of

vision to probably a thousand million light years; and almost equally it renders possible a knowledge of the past. No sound comes out of the past, for sound is intensive and momentary. We can only meagerly reconstruct past human languages from visual materials; we cannot know definitely how Latin, for instance, was spoken by Caesar but we can read Caesar's written, i. e., visual, words two thousand years later. The phonograph makes only a slight change in this situation, because of its limitations. Books, on the other hand, multiply, and our heritage of visual material grows beyond the dreams of our ancestors. Books, more than any other device, preserve all that is most precious in our human heritage and make the past live in the present. All books are preserved light, except the merest fraction—those in the touch systems.

Light itself from the physical point of view is a very tenuous thing. It may be looked upon as a rhythmic disturbance of an hypothecated ether; similarly, as a rhythmic displacement or as a change of field, the duration being almost infinitesimally short. So conceived, light is reduced to a mathematical concept, existing in the brains of physicists and mathematicians. Real light is a physiological and psychological effect. In plants and lower animals the effect is more restrictedly biochemical; in higher animals and pre-eminently in man the effect passes over into the psychological. In the highly cultivated human, light effects become most intricate and are correlated in experience in such a way as to render analysis all but impossible; that is one reason why psychologists prefer to experiment with rates! Perhaps the highest effect of light is to be found in its relation to the continuity feeling which J. B. S. Haldane makes the supreme test of conscious life.

Lighting and Seeing

It is all-important that the eye as organ of sight and light as its medium be brought together in the most effective way. Mankind up to some few thousand years ago—a mere moment in cosmic time—saw only by natural light, sunlight chiefly or reflected sunlight in lunar and planetary light, very dim starlight, the night glow of volcanoes, the momentary flash of lightning, the faint gleam of firefly or glowworm. Campfires were the first venture in artificial lighting, then torches, candles, oil lamps and on to gas and elec-

tricity. Effective lighting came only with the gas mantle and recent types of electric lighting. Earlier man's world was, too, a green world, a world restful to the eyes because it and eyes had grown up together and eyes were hence made for a green world. But with "modern" life all this is changed; the great majority of persons now live in cities where they see little of the natural greens, browns, greys, cobalts and so on, by nature's own sunlight; rather they dwell in a world of glares and of half-lights. On a bright summer day in full sunlight one sees with an intensity of 10,000 foot-candles; in extreme cases natural light may rise to a brightness of 15,000 foot-candles; even in the shade of a tree in the open the intensity is still 1,000 foot-candles. Under the more natural conditions, too, such as plowing in a field, picking fruit or fishing, man has to contend with little glare and his visual accommodation is sufficient for all purposes. Looking into an automobile headlamp at a combined speed of 90 miles an hour—just the highway limit, be it noted!—is a very different matter. Things may happen due to overstimulus or faulty reaction, and happen very quickly. But faulty and deficient lighting may be worse than glare. Many watchmakers and most readers undertake an unnatural and most exacting task under conditions calculated to put a severe strain upon even an accommodating and resilient organ. Long continued and repeated abuse will wear out the best of servants.

Recently there has come into being a new genus of experts, with many species, the illuminating engineers. It remains to be seen whether they are truly enlightened themselves, with no intention of serving sinister purposes. They not only promise to do an immense service in determining optima of quantity and quality in the supply of natural or artificial light, evenness of lighting effect and so on, but they ought soon to be in a position to enlighten public opinion and gradually force printers, paintmakers and other manufacturers into hygenic and ethical practices. Hail to a new profession and more power to them!

The Educational Program

Education has come to mean so much more than schooling that one almost has to define the term before he can use it without danger of misunderstanding. If then the writer of this paper is

referring primarily to a school program in what follows, he has in mind, nevertheless, the many ramifications of the subject—parental education, education of the general public, a campaign of general enlightenment, bringing together expert knowledge from all possible sources, and, not least, the effecting of what can be done through legislation, city ordinances and local regulation. In laying down a seven point program, then, he wishes to be understood as speaking chiefly for schools but also as implying a much more comprehensive program.

1. Our boys and girls should first know something of the structure of the eyes, their powers and possibilities and their limitations, and also that we see best with a pair of eyes exactly co-ordinated and further co-ordinated as a pair, with nervous, muscular and bone structure.

2. The practice of personal hygiene should be taught as including the care of the eyes and the fact that should be especially stressed is that such care extends to matters like eating, drinking, smoking, etc. Children should be made acutely aware of the fact that some drugs make us see double or otherwise give distorted and unreliable images.

3. Everyone should be taught not to rely upon self-diagnosis or any partial type of examination but to seek the best expert advice in correcting any anatomical defects or physiological disturbances of vision. They should further be taught that repeated examinations may be essential to eye health.

4. Properly conditioned environments with regard to the sources, modifications and quantity of light are very important.

5. The selection of educational materials should involve the questions of color, glare and contrast. This means not only the selection of the best materials from the visual point of view but the arrangement of all educational objects and materials to insure the best possible lighting effects.

6. Quickness of visual reaction should be stressed. Prompt and precise response is vitally important in a machine age, especially in the exacting conditions of traffic on crowded thoroughfares.

7. Everyone should have a glimpse into the ramifications and correlations of the above. The relation of lighting and seeing to commerce and industry, home life, art, daily contacts and the

enjoyment of nature should be taken up seriously and extensively. Above all it should be made clear that the lighting-seeing relationships are literally vital in planning one's life, both to secure and to give a maximum of worth. Light, sight and the fine art of living are inextricably intertwined.

What Can the Blind Do About It?

Surely no group is so acutely aware of the value of sight as those who have lost their own sight either wholly or in part. The extremely rare person who is born blind and has never seen may well develop an experience into which no element of sight enters directly and hence may profess only a mild curiosity as to what light and sight may be like, but anyone who has had the experiences of sight or retains them in part, is more in a position to appreciate the full meaning of vision than one to whom such experiences are commonplace. The blind and the partially blind can, then, speak with a fulness of meaning which is bound to be impressive and to add momentum to the sight conservation movement.

Some may recall that one of the early exponents of the Newtonian theory of light was a blind mathematician. I have personally heard another blind mathematician give a clear and concise explanation of propagation of light, angles of reflection, refraction and other light phenomena to those who could see. After all, intelligence is the true Light and loss or lack of sight only challenges intelligence, does not destroy or defeat it. The blind may therefore be requested to bring their experience and enlightenment to the cause of better vision, the conservation of all sight, and the increase of insight.

Eye Conditions Prevalent in Early Adult Life*

Wm. F. C. Steinbugler, M.D.

THE author outlines the symptoms and treatment of those eye conditions which usually appear between the twentieth and fortieth years of life

IN considering eye conditions prevalent in early adult life, the span of years from 20 to 40 has been included, and it was deemed advisable to classify them according to: (1) developmental disorders; (2) focal infections; (3) systemic disorders; (4) muscle imbalances; (5) tumors; (6) drugs and beverages.

Developmental Disorders—Keratomalacia

In analyzing developmental disorders, those due to nutritional disturbances and those due to the onset of hereditary lesions must be considered. An example of the former is the so-called keratomalacia, or softening of the cornea which occurs in persons whose food is poor in fat content, where there is an insufficient absorption of fat, and in some liver conditions. Fortunately, it is seen very rarely in this country, but is observed in Russia, where the fasts are long. Cod liver oil is almost a specific in the treatment.

Interstitial Keratitis

Of the hereditary conditions which may make their first appearance at this time, probably the most important is interstitial keratitis, due to inherited syphilis. As a general rule, the symptoms come to the fore earlier in life, but they may be delayed until after the twentieth year. The disease is usually bilateral, both eyes being involved at the same time, and there is marked impair-

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ment of sight with cloudy cornea, redness and intolerance of light. The cloudiness of the cornea, when it occurs near the periphery, is followed by vascularization, giving rise to the so-called "salmon patch." There are, as a rule, some of the other associated symptoms and signs of the inherited disease present, the most common of which are: (1) Hutchinson's teeth—a notching of the upper central incisors on their cutting surface, or peg-shaped upper lateral incisors; (2) catarrhal deafness; (3) scars at the angles of the mouth; and (4) high arched palate. The interstitial keratitis, deformed teeth and catarrhal deafness are referred to as Hutchinson's trilogy, indicative of inherited syphilis. Fortunately, the cornea in most cases loses its cloudiness, so that a fair degree of vision is retained, normal vision not being an infrequent finding following an attack, the customary duration of which is from six to twelve weeks. At this time of life the first symptoms of the hereditary retinal degenerations may put in an appearance. True, some of them can be recognized earlier by means of the ophthalmoscope, but the actual interference with sight and the symptom most commonly found—night blindness—may not be complained of before the third decade. Of this group, the outstanding example is retinitis pigmentosa. As previously stated, the chief complaint is night blindness, and the most important eye findings are a progressive atrophy of the specific elements of the retina and a deposit of pigment which lies in front of the blood vessels. A late complication is a posterior cortical cataract, and these cases usually progress to blindness, which does not ensue, however, until after the lapse of many years. Up to the present time treatment has been of no avail.

Focal Infection

We next come to the large group of focal infections and these seem to be most prevalent early in adult life. Focal infection has been defined as a metastatic, systemic or local condition due to infectious micro-organisms or their toxins carried in the blood or lymph stream from a focus or foci of infection. A focus of infection is a localized or circumscribed area of tissue containing pathogenic micro-organisms and may be either primary or secondary. The most common foci of infection are: (1) the teeth; (2) the tonsils;

(3) the middle ear; (4) the nasal accessory sinuses; (5) the gastro-intestinal tract, including the gall bladder and appendix; (6) the genito-urinary tract, usually the prostate and seminal vesicles in the male, and the uterine mucosa in the female. The parts of the eye most frequently involved as the result of focal infection are: (1) cornea; (2) iris; (3) ciliary body; and (4) choroid. In all eye conditions where a focus of infection is suspected, a careful search should be made for it, the X-ray being used if necessary, and the cause eradicated. That focal infection is often the only cause of an eye condition is definitely proven by the following history of an illustrative case:

K. F., single, female, aged 35, first seen June 25, 1918, complaining of redness and pain in the right eye of one week's duration. Had two previous attacks, the first two and one-half years before, lasting eight weeks, the second five months before, lasting five weeks. Clinical picture, acute iritis right eye. Wassermann negative. July 1, 1918, right upper first bicuspid removed. July 9, 1918, fresh infection. August 12, 1918, some more teeth extracted. Slight recurrence in same eye in January, 1920, at which time three more teeth were extracted. Patient has remained free of trouble since—a period of over 16 years.

To guard against the possibility of focal infection causing eye trouble in adult life it is a good plan to have diseased tonsils removed during childhood and to have a semi-annual check-up of the teeth by a competent dentist.

Iritis

As the most common eye disease occurring as the result of focal infection is acute iritis, it might be well to say a few words about it. It is essentially a disease of early adult life, rarely seen in children and rather infrequently in the aged. Besides being caused by foci of infection, it may be due to many systemic diseases, chief among which are syphilis and tuberculosis, to metabolic disturbances, such as diabetes, gout and thyroid disorders, to injury, and as the result of sympathetic inflammation. The male sex seems to be affected more than the female, and the symptoms complained of are usually pain, redness, tearing, intolerance of light and diminution of vision. The pain is situated not only in the

eye itself, but radiates to the parts in the vicinity, especially the bony region above the eye, and has a marked tendency to be worse at night. On examination of the eye, two groups of signs present themselves. The congestive group, due to the increased vascularity of the iris, which consists principally in a change of color of the iris—causing a blue or gray iris to appear greenish, but not being so clearly seen in the darker colored eyes—and, at times, the ability to recognize individual blood vessels. There is also narrowing of the pupil caused by the dilatation of the iris due to the fulness of the vessels and a spasm of the sphincter produced by the irritation. The other group of symptoms is caused by the presence of the exudate. This is a serous or serofibrinous fluid which is poured out into the substance of the iris and the anterior and posterior chambers of the eye. The exudate in the iris aggravates the discoloration and the loss of pupillary reaction, while that in the anterior chamber causes a cloudy appearance of the aqueous, demonstrated by passing light through the pupil. This area normally appears black, but in iritis it is gray. When the particles which float in the aqueous sink to the bottom, a clearly defined yellowish mass is seen. At times when congestion is extreme, a collection of blood may be seen in the same location. The exudate poured out into the posterior chamber is not accessible to direct observation but shows itself in the form of adhesions between the iris and the anterior capsule of the lens which lies directly behind it. These cause the pupil to be irregular in shape, a fact which is demonstrated when atropine is instilled into the eye, and may, by interfering with the passage of the intraocular fluids, cause an increase of tension.

There are two eye conditions for which iritis is frequently mistaken, namely, conjunctivitis and acute glaucoma. There should be little difficulty in distinguishing an iritis from a conjunctivitis, which, in its acute form, is at times referred to as "pink eye," because of the presence of a mucous or a mucopurulent discharge, but, as the treatment of an acute glaucoma is exactly the opposite to that of an acute iritis, it may be a matter of serious import if this mistake in diagnosis is made. In general, glaucoma does not appear before the fiftieth year of life, but the important points of differentiation are that in iritis the pupil is smaller than normal and

the tension of the eye is normal, or only very slightly increased, whereas in glaucoma the pupil is wide and the tension is markedly increased.

Systemic Disorders

We now come to a discussion of eye conditions seen as the result of systemic disorders. This particular group covers almost the entire field of ophthalmology and, needless to say, only the more important ones can be reviewed. For the purpose of ease of presentation they have been divided as follows: (1) diseases of the respiratory system; (2) diseases of the digestive system; (3) diseases of the cardiovascular system; (4) diseases of the genito-urinary system, including the so-called social diseases—syphilis and gonorrhea; (5) diseases of the nervous system; (6) metabolic disorders, including diseases of the ductless glands; (7) infectious diseases.

Respiratory System

In diseases of the respiratory tract—especially those associated with high fever and, very frequently, following a severe catarrhal condition of the upper air passages, with or without sinus involvement—a corneal disease known as herpes is often encountered. The initial symptom may be sharp pain, resembling that caused by the entrance of a foreign particle into the eye, followed rather shortly by redness and tearing. At times the corneal process shows a treelike distribution to which the term dendritic keratitis has been applied. If not promptly recognized and combated with proper treatment, there is a tendency to spread, and the centre of the cornea, over the pupil, may be involved, leading to the formation of a scar with subsequent visual impairment.

Associated with diseases of the nasal accessory cavities—the sinuses—there may be local involvement, resulting in periostitis or optic nerve pressure, giving rise to the so-called retrobulbar neuritis because of the fact that the optic nerve back of the eyeball is the part affected. This, in the acute form, causes marked and sudden diminution of vision and calls for prompt action in opening and draining the offending sinuses. The immediate and complete cure resulting therefrom is often little short of miraculous.

Digestive System

Reference has already been made, under the heading of focal infection, to the part teeth play in the production of eye diseases. The most frequent symptom of diseases of the liver and bile passages is jaundice, the first indication of which shows itself in the discoloration of the whites of the eye. In chronic jaundice the eyelids show the presence of superficial yellowish tumors which grow very slowly, never change their benign character and are removed only for cosmetic reasons. The symptom of night blindness is well recognized in diseases of the liver.

Cardiovascular System

Bleeding into the whites of the eyes, the so-called "subconjunctival hemorrhages," while it is usually regarded with a great deal of apprehension, is not of serious import. Such hemorrhages are usually caused by the external condition or as the result of physical exertion and resorb without leaving any trace of visual impairment.

More grave are the sudden, partial or complete losses of vision in one eye which are the result of embolism or thrombosis of the central retinal artery. The degree of visual loss is dependent on whether the main trunk or one of its branches is occluded. This occlusion is promptly followed by nutritional disturbances and tissue changes in the retina, which, after a very brief time, are not capable of recovery. In cases of this nature a prompt widening of the vessels to permit the re-establishment of the circulation of blood is the end aimed at. This may be brought about by vigorous rotatory massage of the eye through the lids after the vessels have been temporarily widened by the inhalation of amyl nitrite. If this fails to bring about the desired result, the fluid in the anterior part of the eye should be drained off. This operation is known as paracentesis and the manner in which a favorable result is effected is in the sudden reduction of the intraocular tension caused by the rapid release of the fluid. In an attempt to maintain normal intraocular pressure, fresh blood quickly enters the eye, and this entrance of blood will, at times, cause the dislodging of the clot causing the obstruction and resulting visual impairment.

Inasmuch as the blood vessels of the eye are the only ones in the body which can actually be seen, many circulatory disorders can be diagnosed in this way, chief among which is arteriosclerosis.

Diseases of the Genito-Urinary System, Including Syphilis and Gonorrhea

Swelling of the lids is a well-recognized symptom of nephritis. It recurs, remains for a few hours or days at a time and then disappears. In the course of nephritis, the most important involvement of the eye is albuminuric retinitis. As the name would imply, it is an inflammatory state of the retina, characterized by hemorrhages and particularly by processes depending upon fatty degeneration. The general symptoms consist of headaches and gastric disturbances, accompanied by well-marked pallor, and the quantity of urine voided is large, of low specific gravity, greenish yellow in color and contains a slight quantity of albumin and no sediment.

In nephritis of pregnancy there may be severe retinitis, which shows itself as a rule during the last four months. It generally occurs in the first pregnancy and only occasionally in a later one without symptoms in preceding pregnancies. For the most part, there is complete return to normal, but optic atrophy may ensue.

In uremia there may be sudden, bilateral, complete loss of sight, with cerebral symptoms, convulsions and suppression of urine. The eye grounds are usually normal on examination except when uremia complicates an albuminuric retinitis. The attack lasts 12 to 24 hours and after two to three days vision returns to the previous state. It is seen more frequently in acute nephritis following scarlet fever than in chronic nephritis, pregnancy or labor.

Syphilis

When an analysis of eye conditions as to their etiological factor is made, it is astounding to learn what a large percentage is due to this cause. It is responsible for two per cent of all eye diseases and attacks almost every part of the structure of the eye which may be the site of entry for the general infection of the body, although more often it is secondarily involved. Both eyes are affected in

nearly 50 per cent of the cases. It is interesting to note the percentages of positive blood tests. In inherited syphilis, the test is practically always positive, remaining so in spite of treatment. In acquired lesions, the percentage is much less, while in the tertiary or late stages only 50 to 75 per cent are positive. The parts of the eye affected also influence the blood test. In interstitial keratitis, an inherited form, the reaction is positive in 88 per cent; iridocyclitis, 50 to 60 per cent; choroiditis, 23 per cent; optic neuritis, 30 per cent; primary optic atrophy, 100 per cent; oculomotor paralysis, 52 per cent. Of six cases of paralysis of the sixth nerve there was not a single positive reaction. Among extragenital chancres, the eyelids are represented by three to four and one half per cent, the favorite site being at the junction of the skin and conjunctiva near the inner angle of the eye. There is the usual swelling which later ulcerates, causing a conjunctival discharge, resembling an acute conjunctivitis. The lymph glands in the neighborhood are swollen. The positive diagnosis can be made by finding the exciting cause—the spirochetae—in the secretion from the ulcer. Secondary and tertiary lesions appear on the conjunctiva as on mucous membranes elsewhere. Reference has already been made to interstitial keratitis, which is usually an inherited condition, being seen in only three per cent of the cases of acquired syphilis.

The fifth nerve may be paralyzed, giving rise to a neuro-paralytic inflammation of the cornea which, because of the fact that it has lost its sensation, often ulcerates, with subsequent perforation and loss of the eye. The iris, sclera, choroid and retina may be the seat of inflammatory processes and the extraocular muscles may be paralyzed, but more important are the optic nerve conditions: optic neuritis with resulting secondary atrophy and primary optic atrophy in locomotor ataxia and general paresis, usually leading to incurable blindness.

Gonorrhea

If it is true that approximately 10 per cent of the population is infected with syphilis and perhaps a greater number with gonorrhea, it is both fortunate and surprising that so little gonorrheal conjunctivitis is seen. This inflammation is the direct result of the

invasion of the conjunctiva by the gonococcus, the primary source of infection usually being the urethra. Within 48 to 72 hours there are swelling and infiltration of the membrane with occasional croupous membranes and a clear, watery, meat-infusion-like discharge. This soon becomes purulent and is present for about ten days to two weeks, at the end of which time the discharge becomes catarrhal. The important complication is the corneal affection, which may be benign or severe. In the latter case an ulcer forms rapidly and the entire cornea may be involved. The corneal tissue melts away and an iris prolapse results with marked or total loss of vision. In the treatment of this disease it is imperative to obtain a culture of the secretion at the earliest possible moment as the gonococcus can be identified with comparative ease. Energetic treatment must be instituted at once, as there is no time to lose in the fight against ulceration.

There is a metastatic form of gonorrheal conjunctivitis in which the discharge is not purulent and which is associated with joint complications.

Iritis may also be found as the result of invasion by the gonococcus. It may be unilateral or bilateral, is usually metastatic and does not lend itself to treatment as readily as iritis due to other causes, because of the fact that there are frequently associated diseases of the deeper structures which cause visual impairment.

Certainly with so large a percentage of eye cases due to syphilis and gonorrhea exacting such a tremendous toll of visual power, every effort should be made to spread the knowledge concerning these two ravages and a determined fight should be waged on all fronts to eradicate, as far as possible, these two great menaces to the human race.

Diseases of the Nervous System

The optic nerve and retina of the eye must be looked upon as a direct continuation of the brain, and, as a result of this anatomic relationship, the eye and the nervous system are closely associated. Brain tumors and abscesses are frequently diagnosed from an examination of the eye, 80 per cent of the former showing some definite change in the eye background. Many eye muscle paralyses will point the way towards clearing up some cerebral condition,

and defects in the visual fields are of great importance in localizing brain lesions. Cerebral syphilis and the so-called metasyphilitic diseases—tabes or locomotor ataxia and general paresis—also have a multiplicity of eye symptoms.

Head injuries resulting in fractures of the skull, particularly the base, are associated with eye symptoms because of the location of the optic nerves and the central optic pathways.

Metabolic Disorders, Including Diseases of the Ductless Glands

The most important of the metabolic disorders is diabetes, which is essentially a disease of later life, but which is not infrequently seen during the years under consideration in this paper. From 20 to 33 per cent of diabetics have eye complications, and cataracts form 30 per cent of these. Occasionally a diabetic will notice that the glass that has been worn with comfort over a period of time suddenly becomes inadequate. This is probably due to a change in the refractive index of one of the media of the eye and calls for a checkup of the sugar content of the blood. When this has been taken care of, the refractive error usually returns to its former state. Iritis and retinal hemorrhages are other eye complications of diabetes.

Of the ductless gland conditions—those glands having an internal secretion—the best known is goitre, and the form in which the eyes are involved—the so-called exophthalmic goitre—merits attention. It occurs most often between the twentieth and the fortieth years of life, and women are affected more often than men. Heredity, nervousness and hysteria predispose one to the disease, although a psychic or mental shock often serves as the actual cause. The predominant symptoms are the prominence of the eyes, the presence of a tremor, the tumor of the thyroid gland and a rapid pulse. It must be borne in mind that there may be an involvement of one eye only. The eyes at times become so far displaced forward that the lids fail to close over them, and because of exposure of the eyeball, especially during sleep, a drying of the cornea with resultant ulceration may ensue.

Lesions of the pituitary gland situated at the base of the brain have definite eye symptoms, particularly referable to the visual fields, which show a bilateral loss of the temporal halves. Tempo-

rary disturbances of this gland occur during pregnancy but there is usually complete restoration to normal.

Infectious Diseases

Reference has already been made to a number of the more important infectious diseases, and under this heading tuberculosis alone will be presented. In tuberculosis, the eye is infected either directly or indirectly, more often the latter. The direct infection is either in the lids or the conjunctiva, or may also be an extension of tuberculosis of the face. In active pulmonary tuberculosis, eye complications are rare. Patients with eye tuberculosis may give a suspicious family history, or tell of some eye trouble early in life, but the majority of them appear in blooming health. In every chronic eye trouble of unknown origin tuberculosis must be suspected, and with the advances made in the detection of these cases with tuberculin, many positive diagnoses are possible. Ocular tuberculosis involves the conjunctiva in the form of ulceration, characterized by the presence of granulation tissue. In the cornea, various forms are seen, one closely resembling the interstitial keratitis of inherited syphilis. The scleral involvement, which is secondary to iritis, shows itself in the form of circumscribed red and painful areas which may disappear entirely. Involvement of the iris may result in a discoloration of it, giving rise to the condition known as *heterochromia iridis*, in which the two eyes are of different color, the lighter one always being the one affected. In the interior of the eye, choroiditis and retinitis are seen, and retinal detachment may be secondary to the former. In young adults, repeated hemorrhages in the vitreous and retina are another manifestation.

Fortunately, many of the forms of ocular tuberculosis lend themselves to treatment with tuberculin and startling cures have been reported as the result of the use of this exceedingly valuable therapeutic agent.

Muscle Imbalances

Improper muscle function, unless it is due to paralysis of an individual muscle, to which reference has already been made, should be incorporated with errors of refraction and will be pre-

sented elsewhere in the symposium. However, it might be well to emphasize the fact that eye symptoms arising in the course of one's daily occupation call for a careful study for the possible detection of an error of refraction and its prompt correction by adequate glasses. In this connection, it might be noted that the question of proper lighting, long neglected, is at last beginning to receive the attention it merits.

Tumors

The early detection of a tumor of the interior of the eye is very difficult, and any unexplained symptom of the eye, particularly if it interferes with vision, calls for repeated and careful examinations. The tumor of the eye most frequently found in adult life is the sarcoma of the choroid, which may, at times, be extremely malignant and cause secondary deposits in the liver and lungs with subsequent fatal outcome. There is no way in which this early spread can be detected, so that as soon as the positive diagnosis is made the eye should be removed.

Drugs, Alcohol and Tobacco

Of the drugs in common use affecting the eye, probably the best known is quinine. Of late years, owing to the fact that we rarely encounter malaria in and around New York City, the administration of this drug has been curtailed. It causes visual disturbances by affecting the optic nerve and the retina in a characteristic way. While the dose required to affect the vision is usually quite large, the English authors, Collins and Mayou, report a case in which defective sight was produced by the administration of five grams, the equivalent of 75 grains, over a period of 38 hours, and 12 grains has produced decided temporary diminution of vision in a susceptible and neurotic woman. Blindness is usually not permanent, but a marked loss of sight may persist. The condition is always bilateral.

In poisoning by lead there may be visual impairment, but the most common disturbance is paralysis of an ocular muscle.

The changes in the eye due to poisoning by salicylic acid or its derivatives, one of which is aspirin, are similar to those seen as

the result of quinine poisoning but much less severe, as no cases of blindness have as yet been reported.

Atropine poisoning, due to the internal administration of belladonna, usually for some gastro-intestinal disorder, the external use of a plaster to combat local pain, or the instillation of drops for some eye condition, manifests itself by a very wide dilatation of the pupils, inability to read material close to the eyes, a rapid pulse, dryness of the throat and flushed face. If the administration is continued, there may be mental disturbances, even delirium. Where an idiosyncrasy exists, the instillation of atropine in the eye may cause itching and formation of follicles in the lids, or a severer reaction in the skin, at times resembling erysipelas.

Meat poisoning, especially the condition known as trichinosis, due to eating infected pork, may show itself in the form of puffy eyelids.

During the past few years a reducing agent known as dinitrophenol has been much in vogue. Its action is dependent, in part, upon increased metabolism and loss of fluid from the body in the form of perspiration. This is a very dangerous drug, since several cases of cataract have been reported as the result of its use.

Of all the poisons affecting the eye, alcohol is probably the most frequent. Ethyl alcohol is the form in which it is usually taken, although, during the era of prohibition, poisoning with methyl or wood alcohol, was not infrequent. The reports of sudden death or total blindness were often seen on the front pages of our newspapers, especially following New Year's parties. Ethyl alcohol poisoning of the eye occurs in a chronic form, as the result of imbibing whisky and brandy, and is practically never seen in beer or wine drinkers. The effects of alcohol are rarely seen before the age of 35 and most often in patients who also use tobacco. The first complaint is usually of fogged sight and later there is actual and marked visual impairment. The course is chronic, lasting for months or years. The prognosis, as regards blindness, is good. There are periods of improvement following abstinence from alcohol, but as soon as the drinking is resumed, the condition once more progresses. A characteristic finding is a central defect in the visual field and, in severe cases, no appreciation of red and green.

Tobacco is harmful to the eye because of its nicotine content. Its effect is similar to that of ethyl alcohol. Cigarette smoking seems to be the least harmful, strong cigars and pipe tobacco being the chief toxic conveyors. It occurs, as a rule, only in individuals who begin to smoke before the twenty-first year and symptoms appear from the fortieth year on. Up to the present time few cases have been reported in women but, as their habits with regard to the cocktail and cigarette have undergone a radical change during the past 20 years, we should expect to find mention of some in the literature soon.

In conclusion, let me emphasize the importance of securing prompt and efficient medical aid whenever eye trouble presents itself. Being a possession of such great value, only medical men specially trained for that purpose should be entrusted with the care of our eyes.

Occupational Adjustment of the Visually Handicapped*

Eleanor Brown Merrill

IN considering how best to help in getting the right work for the visually handicapped, it is necessary to draw on the experience of rehabilitation and employment service, hospital social service, occupational therapy, work for the blind, industry, education and vocational training

LET me say, first of all, that in discussing occupational adjustment of the visually handicapped I refer to the partially sighted and not to persons classified as blind. There is overlapping in some instances of failing vision, when a progressive condition indicates the prospect of ultimate blindness and the need for adjustment to an altered future with more limited opportunities.

If the eye condition is such that a life of blindness must be faced, there may be upheaval in the whole world of the individual; beside the economic element involved, a need for entire change in habit, thought, recreation and interest may be demanded. The medical case worker knows this situation only too well, and I have drawn upon material from a hospital social service department as illustration:

A man of fifty, formerly a dye maker, was referred to social service, having been unemployed for two years. Though under treatment in both the eye and syphilis clinics, sight was gradually diminishing due to glaucoma and optic atrophy of luetic origin, and the doctors could offer only an unfavorable prognosis. Always a good provider, this man's desperation on finding himself unable to support his wife and dependent daughter and his panic as to the future can be imagined. Fine and patient work over a long period was required to bring about an understanding and acceptance of the situation, a belief in the medical treatment required, a willing-

* Presented at the National Council on the Physically Handicapped, Atlantic City, N. J., May 28, 1936.

ness to receive temporary relief, and co-operation in a plan for training through the Workshop for the Blind and the Goodwill Industries. The final result was re-establishment in a wage-earning capacity as shoe cobbler, with renewed self-confidence and family pride.

In bringing about a better adjustment to life, each person coming in contact with the visually handicapped individual has his part to play. The family, the friend, the doctor, the counsellor, the employer, the case worker, the occupational therapist, the teacher, all must share in this responsibility; and more concerted thought must be given to the problem of economic adjustment. Vocational guidance in this specialized field has not as yet got very far, though with increasing emphasis on the need and more general participation in a rounded program, there is ground for encouragement. In "A Study of Occupations of Partially Sighted Boys and Girls" by Marguerite Kastrup, published by the National Society for the Prevention of Blindness, the author makes many suggestions in answer to that ever present question in the minds of teachers—"What can children with seriously defective vision do after leaving the sight-saving class?" Miss Kastrup gives a fairly bright picture of the field open to those with poor vision, taking into account visual limitations and occupational hazards in relation to eye difficulties. Positions in factory work, selling, personal and professional service, and outdoor work of various kinds are among the opportunities suggested for both myopes and those designated as low visioned. The proportion of pupils employed, as shown in this Cleveland study, was gratifying. In general, however, there seems much need for convincing employers that persons with but partial vision can satisfactorily fill positions of any kind. There is an objection to employing the handicapped which is hard to overcome, but a right approach to the employer can accomplish much in obtaining his interest and understanding co-operation.

Let me cite another instance gathered from the records of a hospital social service department:

Mr. Blank was admitted to the hospital for a cataract operation which brought sufficient vision to the operated eye with glasses for doing simple clerical work, though the second eye was sightless; an elderly man, he had been employed by a mercantile agency for over

ten years when he was discharged for incompetence which the manager did not recognize as due to failing vision. In learning later of the man's financial difficulties, the manager undertook to personally assist with rental of the home, but the family was averse to any approach being made as to re-employment, thinking of him as "cross" and uninterested. When informed, however, of Mr. Blank's eye condition, the company was glad to take him back on its payroll, saying: "If Mr. Blank has sufficiently good vision for work that will not tax the eye too severely, we will do all in our power to take care of him."

The Western Electric Company is an organization that has recognized a responsibility for employing a certain proportion of handicapped workers, believing that emphasis should be put on ability to perform useful service rather than on vocational defects. The need for careful guidance and placement with a view to the disability involved is not overlooked, and one must recognize the impracticability of going beyond a certain point of saturation in employment of the physically handicapped. In reporting on the Company's experimental work along this line, however, Mr. J. W. Dietz indicates that the additional cost of follow-up procedure to insure suitable placement might be offset by the advantage of securing a more stable group of employees. The occupationally secure may have less urge to present satisfactory performance, feeling that other jobs will be ready if the present one is lost.

It was interesting recently to hear the matter of selection from the standpoint of industrial value rather than from that of the particular handicaps involved, emphasized at an Institute on Conservation of Vision arranged by the Bureau of Prevention of Blindness of the New York State Division for the Blind. Mr. O'Toole spoke for the Department of Guidance and Placement of the New York City Schools. He contended that instead of thinking in terms of what vocations might be available for sight conservation pupils, we should approach placement from the standpoint of how these pupils can be adjusted to the vocations in which they are interested. Certainly we must weigh employment opportunities against the limitations of reduced visual efficiency; we must take into account the fact that only a given number of visually handicapped can be absorbed in the industrial and commercial fields. However, there is no question but that more consideration

should be given to the importance of real case work with these applicants for placement and of getting to know not only their abilities, but their tastes, ambitions and inclinations.

Since the age of seventeen, some years ago, Julius B. has been under the care of rehabilitation service. Further medical examination confirmed the original diagnosis of horizontal nystagmus, high myopia and a partial atrophy of the optic nerve with visual acuity of 20/70 in both eyes after correction. The condition was not considered progressive and in view of Julius' strong ambition to specialize in the mechanics of aeronautics it was felt better to encourage him in this interest than to try and steer him into another line of work. Julius showed marked intelligence and alertness in the use of his limited vision, and by judging him and his potentialities on this individual basis, the ophthalmologist saw no danger in the period of training necessary nor in following the boy's desires as to placement.

Mention has been made of the value of training available through Federal-State Rehabilitation Services. This may be given either on an apprenticeship basis or in advance preparation for a particular job, and it affords a splendid opportunity to develop sound and permanent programs. Such counselling services as can be provided also through rehabilitation departments can establish confidence in the mind of an applicant, re-awaken buried hopes and develop optimism that, in company with practical guidance along the path of opportunity, will bring about mental, social and economic adjustment to a surprising extent.

I am inclined to think that through consultation with the ophthalmologist, who must be final judge as to proceeding with visual safety, the partially sighted can be fitted into those occupations which they have wanted to follow more often than is generally realized. However, it is very true that with the right approach new interests can be aroused and an individual happily adjusted to a line of work quite different from that originally undertaken. Again I turn to hospital social service for illustration.

A man of 30 with wife and small child was discharged from the eye ward with 20/200 vision in both eyes, the diagnosis having been ulcers of the cornea. His old job of guard on the subway was not available because of his impaired vision; and, furthermore, the doctor advised a life outside of the city, in view of his repeated

ocular attacks. Finally a position as butler in a country home was secured, with the arrangement that his wife should do the cooking, and both were given the necessary training. Vision improved to 20/70 and the couple remained self-supporting and happy in this line of work—certainly very different from the former occupation of subway guardianship!

Mr. Jones, highly myopic, with a detached retina of one eye that could not be successfully repaired, had been trucker for a fruit company. Following hospital care, it was necessary for him to resume support of his family, and a trucking job was forbidden because of the myopic condition and danger of retinal detachment in his one seeing eye. Through the co-operative efforts of several interested agencies he was put in charge of a newspaper stand and given supplementary financial aid until self-supporting.

Careful evaluation of each applicant's potentialities is essential, as is a farsighted point of view in helping to work out sound plans for the future. Another instance of detached retina of one eye comes to mind, when again operative procedure could not be successful. The sighted eye with correction had 20/40 vision, but, being highly myopic, the danger of detachment made re-employment as a laborer inadvisable and in this man's trade as an iron worker there was no opportunity for placing him. Through joint action, arrangements were made for him to secure six months' training in poultry raising at the Institute of Applied Agriculture, with a good prospect of placement in this line of work.

A fifteen-year-old boy of German parentage had been without usable vision since the age of nine, at which time his education in a parochial school had ceased; now hospital diagnosis showed a degenerated left eye and complicated cataract on the right. The left eye was removed and prolonged care with several operations secured 20/40 vision in the other; but at nineteen, with his very inadequate schooling and preparation, the outlook for this boy's future was gloomy, to say the least. Much had to be done with the family and with the boy himself in creating first a faith in medical treatment and later a realization that useful vision had been restored. The process of stimulating interest in vocational planning was more difficult still, especially as this entailed a re-adjustment of the whole family because of financial strain. The final solution, brought about through a development of trust and co-operative handling of the situation, was the rental of a cheap, dilapidated farm. Here the family of four, with the additional help

of a son working in the South, set about reconditioning and building up a vegetable and poultry market, with the boy, Eric, happy and actively at work on the farm. Instructive material obtained from the United States Department of Agriculture has served as guide in this apparently successful venture.

In the material that I have had opportunity to consult recently, many similarly nice placements are noted, with excellent adjustments to change in occupation and environment. Those of us in touch with the needs of the visually handicapped are well aware, however, of failures, of repeated discouragement, of inability to connect those two entities—the one who has something to offer, and the one who needs his services. But never let us fall into the error of thinking that there is no useful niche for the one with impaired vision. In vocational guidance there must be emphasis on assets rather than on liabilities. The visually handicapped must be thought of as potential contributors to the world—economically, socially, and, in fact, educationally, for it is through them that we can learn man's ability to overcome obstacles, to adventure into new ways, to meet cheerfully such trials and difficulties as will come.

You see from this discussion that I have drawn on the experience of rehabilitation and employment service, hospital social service, occupational therapy, work for the blind, industry, education and vocational training. It is upon the contribution of such varied factors that progress in this field must depend, for as has been indicated, it is only through close interplay and mutual understanding of these factors that success can be achieved.

The Cross-Eyed Child*

Brittain F. Payne, M.D.

FOR the proper correction of cross-eyes, the efforts of the oculist, general practitioner, parent and teacher are required to get the necessary co-operation of the child

THE cross-eyed child presents a great problem—great in the sense that he worries his parents, the family doctor and the eye-physician and, most of all, himself. The care and guidance of such a child is vitally important. He is not a cripple but is regarded as such by his playmates. Thoughtless remarks from children of his own age arouse a defensive attitude. He becomes sensitive to such names as "cock-eye" and "wall-eye." Whether he will become reserved, morose or pugnacious depends upon the treatment he is given. It is possible to develop normal individuals from cross-eyed children and this is being done today by means of careful medical supervision. Most eye hospitals, clinics and eye-physicians devote great effort to the treatment of this defect.

Eye-physicians appreciate the psychological, as well as the physical side of the cross-eyed child's problem. Various methods and many devices are used for the treatment of cross-eyes. Some of these instruments are useful, but no treatment should be undertaken until the underlying cause is determined. This should be done by a physician who has had special eye training. The reason why a physician should determine the cause of cross eyes is that he understands the entire body and knows the close relationship of the eyes to other organs. Cross-eyes may be the result of an accident before or during birth, or it may follow a disease of early childhood. The experienced physician would recognize these causes immediately. Parents should realize this and save themselves much anxiety and valuable time in the treatment of their children by consulting an eye-physician.

* Radio address delivered over WOR, through the co-operation of the New York Tuberculosis and Health Association.

Types of Cross-Eyes

Cross-eyes may be classified into several different types. There is a type in which the eyes may appear straight, but become crossed when the child is excited or fatigued. Another type may show no apparent crossing but merely a tendency which later develops into an actuality. These are the ones which may be helped by properly fitted glasses and certain exercises. Other types may show a definite turning of one of the eyes. It may turn in or out, or it may turn up or down. The eye which does not cross is called the good eye, the fixing eye or the master eye, and is always used to focus objects. The eye which turns is seldom used as much as the other and, therefore, its visual power is diminished. There is a type of cross-eye in which the vision is equally good in both eyes and either eye may be used as the master eye. The child simply uses the eye that fixes the object first and disregards the image in the eye that turns. The medical term for this condition is alternating squint. It is often difficult to treat this type with exercises but they should be tried in every case. Glasses may help any type of squint.

A convenient classification of cross-eyes has been made by Doctor Pugh of the Royal London Ophthalmic Hospital in which squint or cross-eyes are divided into the following groups: (1) Physical-defect group; (2) Error of refraction group, which includes those needing glasses; (3) Fusion-defect group, including those who fail to use both eyes together; and (4) Psychological group.

Physical Defect Group.—The physical defect group applies to eyes in which some disease has destroyed the back of the eye, or caused cataracts or scars to form which interfere with vision. It also applies to developmental defects and to hereditary tendencies. Some children fail to develop useful vision in one eye without apparent cause. The eye turns in or out, up or down, and sometimes an operation is required to straighten it.

Error of Refraction Group.—The error of refraction group refers to children who may be helped by wearing proper glasses. Frequently, they are cured by wearing glasses alone. In other cases, exercises and glasses may effect cure. This group offers the most hope for successful treatment without an operation. About 50 per cent of all cross-eyed children may be included in this group. Parents often ask how early glasses should be given to a child. They

may be worn successfully from the age of one year and in some cases earlier than that. We have seen many cross-eyed children helped before the age of two by means of properly adjusted glasses. Children often like them so well that they cry when they are removed at bed-time. The glasses should be prescribed by an eye-physician after the instillation of drops to dilate the pupil. The use of drops is necessary to determine the correct glass. We have never seen any harmful effects from the use of drops in the eyes of children. An accurate determination of the true measurement of the eye is impossible unless the pupil is dilated by means of drops.

Fusion-Defect Group.—The fusion-defect group includes children in whom the ability to make a single image out of the two visual impressions received by the brain, is defective or lost entirely. Glasses and exercises may not help them. However, they should be given a trial, and sometimes, a patch worn over the good eye stimulates and forces the use of the weaker eye. When the vision in the poor eye improves, it is possible that the two eyes may work together. This group includes about 20 per cent of all children with cross-eyes. It is important to recognize this type early and to institute proper treatment if an operation is to be avoided.

Psychological Group.—According to Dr. Pugh, the psychological group includes approximately 20 per cent of all squints. This condition usually occurs much later than the other groups. It may be imitative, for a history of imitating a parent or envied person is often given. School children frequently cross their eyes for the fun of it. Occasionally, the arrival of a new baby in the home will cause an older child to develop squint, which is done to regain lost attention. Others may develop crossed eyes after a fright. Training left-handed children to be right-handed is said to cause a turn of the eye. The treatment of this group is concerned with psychological measures and exercises as an adjunct. When readjustment occurs the eyes become straight. It would be unwise to operate until all other measures have failed.

Paralytic Type of Cross-Eyes.—An important class which has not been mentioned is the paralytic type of cross-eyes. In fractures and injuries to the head, the nerves to the eye muscles are often injured. The affected eye may turn away from its normal position. The patient will complain of double vision, which persists until he

recovers. In some cases, recovery takes a year or more. Others may retain double vision for a few years and may have to be corrected surgically. Double vision may occur in sleeping sickness. It may occur from injuries before and during birth. When eye muscles are paralyzed and the patient complains of double vision, we often cover the affected eye until it improves. Every effort is made to effect a cure without surgery, and at least from 12 to 18 months are allowed to pass before an operation is considered.

Many people are not actually cross-eyed but reveal a strong tendency to cross their eyes. We speak of this condition as "muscular imbalance." This condition is a serious handicap to aviators, automobile drivers, pilots and locomotive engineers. Persons so affected suffer from eyestrain, headaches and inability to judge distances. This condition is found in children and may not be determined until they are given a complete examination by an eye-physician. It often explains the lack of concentration in school children and, if not corrected, may develop into actual cross-eyes. It may be corrected by proper glasses, eye exercises, and the use of a prism in the patient's lenses. This tendency toward cross-eyes may be helped to such an extent by exercises that glasses may be unnecessary. It is the ambition of eye physicians to discontinue the use of glasses where possible, but in some cases they are needed and should be worn.

Regular Eye Examination of Children

We have considered all of the principal types of cross-eyes but we have said little about the regular examination of the eyes of children. Most authorities agree that all children should be examined by a competent eye physician before the school age. Valuable facts are often discovered which may influence the progress of the child in school. A child with granulated eyelids or cross-eyes is not expected to advance as rapidly as one with normal eyes. The examination consists of:

1. An accurate determination of the vision in each eye separately and together.
2. Examination of the eye muscles to see that cross-eyes or a tendency to cross-eyes are not present.
3. External examination of the eyes to rule out granulated eye-

lids, scars on the window of the eye and defects within the eye which might interfere with vision.

4. Testing for glasses by means of drops which dilate the pupil and give accurate estimation of the refraction.

5. Examination of the interior of the eye, with the pupils dilated, to see that the optic nerve and seeing layers of the eye are normal.

Such an examination may demonstrate the crossing of an eye or some other equally important condition. It often happens that parents have no suspicion of anything wrong until their child is tested carefully. From the examination, the doctor is able to classify the type of cross-eye and determine the treatment on a logical basis.

Why Treat Cross-Eyes?

The primary object in the treatment of squint or cross-eyes is to make the two eyes work together as a single unit. Normal individuals are able to compose the separate images of the two eyes into a single mental picture. They are able to appreciate distance and depth. The cross-eyed person cannot fuse the two mental images and has poor judgment of distance. He may have double vision. A child usually develops the faculty of fusing the two images fairly early in life. Most authorities agree that fusion develops before the age of 6 or 7 and rarely after that age. It is often defective if developed later in life. A test for fusion should be included in the first examination of the child, which should be performed before the age of 5 or 6.

No two cases of cross-eyes are alike in all their details. Each should be considered as an individual case and treatment should vary according to the particular case. In some instances, it is wise to straighten the eyes by means of surgery at an early date. In others, if an operation is indicated, it is wise to wait until after the age of 7. Surgery is never considered until every effort is made to correct the squint by glasses, exercises or other treatment. If glasses are needed, they should be tried for several months. Exercises should be prescribed and a patch worn over one eye if necessary. If all nonsurgical treatment is exhausted and it becomes necessary to operate, the parents should select an eye-physician who has had adequate experience in eye surgery. The operation

itself is not a dangerous one but requires considerable skill. It is confined to the muscles outside of the eyeball. Small children usually require general anesthesia but we have operated on some as young as 5 and 6 under local anesthesia. It is much better to operate under local anesthesia, whenever possible. Operations to straighten cross-eyes are almost always successful.

Conclusion

Cross-eyes often may be cured if the condition is recognized early and proper treatment is prescribed. The advice of a trained eye-physician should be considered and followed. The co-operation of parents and the general physician is needed. The confidence and enthusiasm of the affected child should be developed. If the child is within the school age, he should have the co-operation of his teacher. But, above all, there must be a willingness on the part of the child and his guardians to co-operate completely if anything is to be accomplished.

Conserving the Vision of Deaf and Hard-of-Hearing Children*

Mary May Wyman

THE author points out the precautions necessary for the conservation of vision of those children handicapped by deafness or hardness of hearing

CONSERVATION of the vision of every child in our schools is the solemn duty of each administrator as well as each teacher. If the State can make laws to demand that every child between certain ages attend school, the parents of the children and society in general are justified in insisting that the schools must use every reasonable effort to see that no harm befalls the child while he is at school. Surely vision is one of the child's most important, most precious possessions.

The advantages of protected vision should extend to all children enrolled in the school system. Those who are handicapped by poor vision are in need of certain types of protection, but the fundamental principles should apply to the normally sighted child as well as to the visually handicapped. Those who are charged with the responsibility of providing for sight-saving classes can contribute many ideas that are applicable to the larger group. In like manner, the school administrator must be willing to accept the basic principles that are worked out by this group of specialists.

Health has been listed as the first objective of education, yet frequently it is neglected entirely in the procedures of the classroom. More often eye health is not only neglected, but is outraged by unnecessary practices on the part of administrators and teachers.

Surely special attention must be paid to the vision of those children who possess the handicap of deafness. When one considers

* Presented at the meeting of the Progressive Oral Advocates, St. Louis, Mo., June 13, 1936.

that deaf and hard-of-hearing children literally hear through their eyes and that their eyes must do double duty throughout life, there is no need to argue that these eyes should be protected. Moreover, deaf children are always under a nervous strain. Eye strain and fatigue add to the nervous strain and the effects are cumulative. Teachers of deaf children, then, must exercise more precaution to protect the vision of their charges than the teachers of the normally hearing children. Let us group the factors that affect vision in two groups—first, those beyond the control of the teachers, namely, those that must be arranged by administrators, architects, business directors, supervisors or principals, and second, those for which the classroom teacher is directly responsible.

Windows

In the first place, every classroom should be large and well lighted. There should be adequate window space to insure sufficient illumination for the close type of work done in the classroom. The best light in any room comes from the top of the window. The windows, therefore, should run as close to the ceiling as possible. Due care should be taken that the depth of the wall from the window to the floor is such that shadows are not drawn across the children's work. Window space should run close to the front of the room to insure adequate lighting of the blackboards. It has been found that unilateral lighting is best for classrooms. If possible, an eastern exposure should be avoided, because of the intense light from the sun during the morning hours. In schools where there is a long afternoon session, a direct western exposure should also be avoided. In some systems, western exposures are permissible since children do not remain at school for an afternoon session. In order to insure adequate lighting, the walls should be painted a light color. The ceiling should be very light in color—white with enough tint to break the glare. Light walls and ceilings reflect the light so that children receive its benefit. Woodwork may be painted or stained, but in any event the material used should not be glossy. A flat-coat varnish or paint should be used. To a child sitting in a desk, a spot of glare on the door frame may cause an appreciable amount of strain that is bound to result in irritation. Since classes for deaf children must be small, there is a tendency

to make classrooms especially designed for deaf children too small to permit any of the activities associated with progressive education or to permit sufficient freedom in changing positions for various types of activity. The room chosen, then, should be large, airy, and well lighted.

Luminaires

Provision should be made for artificial light to supplement daylight. Luminaires should be carefully placed so that there will be an even distribution of light. Each should be equipped with a shade that will diffuse the light. Each shade should be large enough to permit lamps of sufficient wattage, and each should be simple in design and kept clean. The artificial light plus the daylight should give at least 20 footcandles of light on the working surfaces even on dark days. Illumination beyond 20 foot-candles is desirable. Many teachers think that sufficient lighting will cause strain, because they confuse light and glare.

Every teacher of deaf children should have access to a sight or light meter. At a maximum, these devices cost only $25.00. Good ones are obtainable now at half of this figure. Light can be easily measured by means of this device.

Window Shades

Window shades should be light in color. They should be translucent so that the light is diffused. Many window shades are so heavy that light is excluded when they are are drawn. Since the best light comes from the top of the window, window shades should be mounted in the middle of the window frame. There should be two shades to each window, the upper one to roll upward and the other to roll downward. The space between rolls should be protected by a shield to prevent the light from entering. The newest shields are of metal made in the shape of a horizontal V. Window shades should be free from cracks and pin holes, and wide enough to prevent streaks of light from entering at the sides. The furniture in the room should be movable, adjustable to the children's size, and finished with dull-coat varnish. Cabinets, tables, et cetera, should be likewise finished so that there will be no shine.

Books and Materials

Books and materials supplied should be selected with care so that there is no danger to the eyes from their use. Soft chalk is the correct type. Sight conservationists recommend a light yellow chalk, since yellow is more easily seen on the blackboards which are slate gray rather than black. For little children, this chalk should be supplied in large sticks one inch in diameter. For older children, where much writing is done on the board, I see no reason why the smaller size, soft chalk should not be used.

In brief, care should be taken that the classroom used by deaf children should meet the standards set for sight-saving classes. Ohio is an example of a state that makes this provision for its deaf children.

Teachers are not directly responsible for any of the foregoing. Quite frequently, however, teachers are consulted, or are permitted to make suggestions about the material to be used in their rooms.

Furniture

There are many factors in classroom management that are directly within the control of the teacher. No matter how perfect the equipment, the careless teacher may permit injury to the eyes of the children. Probably the greatest sin committed by teachers is that of the arrangement of desks. Movable furniture has many disadvantages when the teacher has queer notions. Somehow, the idea has reached teachers that if the children are seated in a semicircle, a circle, or a hollow square, the situation is a social one. Some teachers insist that there can be no social situation if children are arranged in rows. Light for work should come from above the left shoulder, so that the shadow is thrown beyond the hand. If the child is reading and is holding his book up, it is permissible to have the light come from the child's back. When children are arranged in three sides of a hollow square, one third of the children sit facing the light, the children at one end of one line receive adequate light which may or may not be from the left side, and the other third sit with their backs directly in the light. As a consequence of this arrangement, about ten per cent of the children, probably less, receive adequate light for their work. A circle or a

semicircle contains much the same disadvantage. The social atmosphere in school is created by the teacher and her attitude toward the children as individuals in a class.

Teachers have a habit, moreover, of using the light side of the room for work that requires little vision. The results of industrial activities, flower stands, the teacher's desk, et cetera, are frequently placed on the light side of the room, while the children work at their desks far away from the windows. With as few children as are usually found in deaf classes, it should be possible to have them move their positions in the room, so that adequate light is provided at all times. The sight meter should be kept in use. Even small children can be taught to arrange conditions for themselves, so that adequate lighting is procured. To learn how to arrange good working conditions is part of the child's education. It has been suggested that boards of education could save large sums of money if they failed to buy teachers' desks. This saving could be made without loss to anyone, since the teacher has no time to sit at her desk. Of course, this is a radical viewpoint. The teacher's desk, however, should be put at the position in the room where the lighting is the poorest. When the teacher does desk work, it is usually in the afternoon after the children have gone. She can then move her work so that her lighting will be sufficient for the work she has to do. The library table has been accepted as a very desirable part of the classroom equipment. Again, great care must be taken to see that the children do not face the light. Quite frequently, although the library table is used for a very small portion of the time, it is given the best position in the room. Many teachers solve this difficulty by having the library table in a place where the books are kept invitingly available and where the lighting is as good as can be secured without monopolizing the best position. Children then go to the table, select their book, and return to their seats for reading.

The small size of the class for deaf children should make it possible for different types of work to be done in different parts of the room. Writing should be done with the light coming over the left shoulder. Exercises in lip reading should be given where the light will fall on the face of those whose lips are to be read. When children are to work from the blackboard, they should be seated di-

rectly in front of the board, close enough to see, but far enough away to avoid the strain of looking up.

A very few rooms in this county are equipped with an electric eye so that lights are automatically lighted when daylight falls below a given number of foot-candles. In the majority of instances the teacher of deaf children must be cognizant of the need for regulating window shades. Some teachers believe that shades must be drawn to precisely the same level. Shades, however, are designed for use. If it is necessary to have one shade down to diffuse the bright sunlight streaming in one window, it should be so arranged.

Curtains

In this same category comes the idea that sash curtains give the schoolroom a homelike atmosphere. One sees curtains made of every conceivable material, from sheer white to heavy, checked gingham and crêpe paper; curtains that cover the lower sash; curtains that are mere ruffles across the window's middle; curtains that are clean, and curtains black with the grime of the city. At best, these curtains cut off the light. If they flutter in the breeze, there are flickering shadows that interfere with somebody's work. Atmosphere is created by the teacher's and children's attitudes. It is largely a reflection of the teacher's point of view.

There is also the "artistic" teacher who believes that pictures look well on the windows. She either pastes her cut-out designs on the panes of glass, or she uses show cards to paint the pictures there. The architects who do try to give adequate lighting have every right to be indignant when teachers cut off the light supply in this fashion.

Then there are plants. It is highly desirable that children have the opportunity to learn to love growing plants. The schoolroom windows, however, should not be overburdened with large pots or boxes of flowers that diminish the amount of available light—especially when it is already cut by the smoke of the city.

Pictures

Another common error is that of hanging large areas of glass-covered pictures where they will create a glare. The teacher does

not have to sit in a seat and look up; consequently, she is not aware of the irritation. While there is a tendency for all teachers to use pictures, the teacher of deaf children uses more pictures than anyone else. The teacher of our deaf children needs, then, to be very careful in her choice of pictures.

It is unfair to expect children to see pictures at a distance of five or more feet that the teacher must hold closely to see. Colored pictures have many advantages over those that are not colored. Mere color, however, does not guarantee that the picture is readily visible. For that reason, sight-saving teachers outline with a firm line of India ink the part of the picture they wish seen. If the pictures are clear, the child is confronted with enough problems —reading the lips, associating ideas, et cetera. During lessons of this type the teacher must be very careful to place pictures on the level of the child's vision. To have a row of pictures mounted at the top of the blackboard and expect children to watch the teacher's lips, then crane their necks to see the pictures and finally to point high above their heads, is expecting the impossible. The teacher of the deaf, therefore, should select her pictures carefully, make them easily visible, and so arrange them that the child can see them.

Finally, teachers of deaf children must avoid cluttering the room with too many pictures at one time. A well selected poster will teach the desired lesson. That one should be left up for a few days and replaced by another. A large array of posters, magazine cut-outs, et cetera, on display all during the day serve only to confuse the child.

Glasses

This paper would have to be many times this length to cover all the points that should be mentioned. No attempt has been made to point out that the eyes of deaf children should be examined by the best available skill to determine if there are defects that can be remedied by glasses. Here, too, the teacher can lend her influence.

In conclusion, the vision of children who are being subjected to the eye strain of reading lips should be safeguarded. Room equipment should be similar to that provided for sight-saving classes.

While the large type books and materials used by sight-saving classes are not necessary for most deaf children, the teacher should constantly evaluate material in terms of eye strain. The teacher must be vision-conscious if deaf children are to be spared the additional handicap of impaired vision.

Education for the Visually Handicapped*

Christine P. Ingram

PRESENTING the aims, purposes, equipment and standards for a sight-saving class, the author describes some specific experiences in the Rochester, New York, classes of which she is the supervisor

EDUCATION for the visually handicapped, as we know it today, is relatively a new child in the field of education when one realizes that in 1913, less than 25 years ago, the first sight-saving class for partially sighted children in this country was opened in Boston in April, and that Cleveland, Ohio, now recognized as one of the outstanding centers for education of the visually handicapped, opened its first class in September of that same year. Five years previously, in 1908, England had opened her first special school for the partially sighted.

Previous to these inceptions, the education of this group was not treated as a special problem. They received their instruction in schools for the blind by the same methods that were applied to the blind, or they struggled in the regular grades with normally sighted children.

The need for and value of the sight-saving class are being increasingly recognized so that each year has shown a steady increase in the number of classes established throughout the country. In the White House Conference Report of 1930 on Child Welfare, one reads that there were 350 such classes in 93 cities and two counties, representing 21 states. Ohio, Michigan, and New York States have made the most adequate provision. The annual reports of the National Society for the Prevention of Blindness indicate additional new classes each year, despite general educational curtailments. The 1935 annual report indicated that the total number of

*Presented at the Institute on Conservation of Vision, Rochester, N. Y., October 15, 1935; arranged by the Bureau of Prevention of Blindness of the Division for the Blind, State Department of Social Welfare.

classes in the United States had grown to 478. This includes the District of Columbia and Hawaii.

Who Shall Go to Sight-Saving Class?

Who are the pupils for whom such special educational provision in the day schools seems advisable? They are those children who on account of defective vision cannot follow the ordinary school program, but can be taught by special methods involving the use of sight, and those who are suffering from conditions such as high myopia which may be affected by following the ordinary school program.

The following quotations are taken from the University of The State of New York *Bulletin* No. 994 on sight-saving classes:

> A New York State Law provides that "in any community where there are ten or more children with such seriously defective vision that they are educationally handicapped, it is mandatory that the board of education establish a sight-saving class to meet their needs. To encourage the organization of such classes the law provides that a full elementary teacher's equivalent be allowed for each special teacher."

Determining the children who are eligible to instruction in such a class, the same *Bulletin* states:

> "The eligibility of children to sight-saving classes depends to a great extent upon the consideration of individual cases, but the following four types make education in the regular grades practically impossible:
>
> "1. Children having more than 20/200 vision but not possessed of sufficient visual acuity to enable them to read ordinary print or to see letters and figures on the blackboard;
>
> "2. Children with progressive eye difficulties;
>
> "3. Children with diseases of the eye that seriously affect their vision;
>
> "4. Children who are able to read ordinary print but only at the expense of their vision.
>
> "The question may arise as to what specific types of cases may serve as a guide for class selection. If so, the following may serve the purpose:
>
> "1. Children who cannot read more than 20/70 in the better eye with correction;

"2. Children who have progressive myopia, even though glasses may bring the vision up to nearly normal;

"3. Children suffering from eye diseases in which some irritation may be present, provided the approval of the attending physician is given;

"4. Any child, who, in the opinion of the ophthalmologist, would benefit by assignment to a sight-saving class, subject to the acceptance of the educational authorities having charge of such classes."

The learning abilities of children in the sight-saving class represent a cross section of the learning abilities of school children in general. Children assigned to such classes may be expected with the special equipment and program provided to make average school progress or better year by year, as do the majority of children in the grades. There may be a few children in the sight-saving class, just as in any grade, who learn more slowly but who can, given sufficient time, master the minimum grade course. The mentally retarded child who has seriously defective vision is placed in a special class for the mentally retarded, and his eye work is planned accordingly.

The number of children enrolled in a class may range from ten to sixteen or eighteen, depending on the age and grade range. As each pupil must be planned for individually, the numbers are of necessity smaller than in the grades.

What Are the Aims of the Sight-Saving Class?

As we recognize the fundamental premise of education for all children, whether handicapped, normal, or gifted, to be the development of the individual to the fullest of his capacity to enjoy, to share in, and to contribute to the worthwhile activities of life, the purposes and values of the sight-saving class come to be realized toward the same end.

Dr. Elise Martens, Senior Specialist in the education of the handicapped in the Office of Education at Washington, states this fundamental principle as follows:*

* Ingram, Christine P.: *Education of The Slow-Learning Child*, World Book Co., 1935, p. ix.

> "Each child shall be educated in keeping with his capacities, limitations, and interests, looking toward the happiest adjustment he can make in life and the most constructive contribution he can bring to society."

Our purpose, then, in the sight-saving class is to understand the individual child, his capacities and his limitations, and to provide the best school environment possible for his all-round development. I shall be more specific as to our purposes and aims when I discuss our Rochester classes.

Community Responsibility for Sight-Saving Class Children

How is our own community meeting the need of the partially sighted child? In 1918 the first class was established in Rochester. Today we have three classes at the Alexander Hamilton School No. 31, with an enrollment of 35 children.

There is a primary class—grades 1 to 3—consisting of 12 pupils; an intermediate class of 12 pupils—grades 4 and 5; and an advanced class of 11 pupils—grades 6, 7, and 8.

There are also enrolled in high schools, eight children who have graduated from the advanced class of School No. 31. For them special programs to minimize eyestrain are arranged and some plan is made for reading orally some of their work to them.

There are four children in the grades whose parents are unwilling for the transfer or consider the distance a factor. There are three five-year-old children in the kindergarten whose teachers and parents have been advised as to special eye care, and who at six years of age will enter the sight-saving class. The total number of sight-saving children, therefore, known in Rochester is 50.

We could care for 12 more children in our present set-up of three classes at School No. 31 and additional state aid for a fourth class might be secured if Rochester has such a need.

The children in need of sight-saving classes represent only a very small percentage of the school population. It is estimated that 0.2 per cent of the school population, or one in every 500, is in need of a special program for his sight. A conservative estimate is one in every 1000. In Ohio, communities that are serving such needs through the sight-saving class, one in about every 650 in the school population is enrolled in a sight-saving class.

On the basis of the school population in Rochester, 49,500 in public elementary and junior and senior high schools, and 17,100 in parochial schools, on a basis of one in every 500, there is an estimated number of 132 sight-saving class pupils; on the basis of one in every 1000, an estimated number of 66. If we accept the latter conservative estimate, Rochester falls short of the number by about 15. Pupils from surrounding towns may be accepted in the Rochester classes and tuition can be taken care of through state aid and petition.

One of our practicing oculists in Rochester has generously given his time for several years to pass on candidates.

Our selection of cases in Rochester is conservative. Whereas each case is an individual problem, a child is not often placed whose vision with correction in the better eye is better than 20/70. We have a much smaller percentage of myopes in our classes than Cleveland. Rochester has 16 per cent; Cleveland has had 37 to 52 per cent over a period of ten years; Baltimore in a recent report showed 44 per cent. I might say, in passing, that a large percentage of England's sight-saving classes are for myopes. Their first sight-saving class was made up wholly of myopes.

In a report in June, 1934, Mr. Lewis H. Carris of the National Society for the Prevention of Blindness suggests certain types of cases that might be referred to the sight-saving class temporarily for physical and mental adjustment. These are the children whose handicap does not require the special program but about whose need for adjustments we should be thinking: the one-eyed child who has just had an enucleation; the cross-eyed child, and children with certain diseased conditions for which eye care is advisable.

It may be that the borderline child in the grade, including the myopes, needs some supervision in his grade work and careful medical follow-up in order that he may work as efficiently and with as little strain as possible. Our regular grade teachers need a background of eye anatomy and eye hygiene. We are glad to note that there is increasing interest on the part of the grade teacher in the physical problems of the individual child, and as time goes on we may look forward to increased understanding and more consideration for eye problems in the regular classroom.

Purposes of the Sight-Saving Class

The following purposes and values are considered for our sight-saving class program in Rochester:

1. To enable the child to adjust as normally as possible to his environment at the present time and to grow increasingly in adjusting so that his education may be a plan which aids toward ultimate adjustment in home, community, and industry.
2. To enable the child to have as normal a school experience as possible in a school with sighted children.
3. To teach sighted children to respect the handicapped child and to appreciate the place he is able to take in his school, home, and community groups.
4. To enable the child to use his limited sight with maximum efficiency and minimum strain.
5. To enable the child to face his handicap and to develop his abilities to the utmost—to enable him to make normal grade progress.
6. To develop healthy personalities—courage, self-confidence, independence, self-reliance, tolerance, and good humor.
7. To aid in seeing that the general physical well-being of the child is attended to and that necessary medical treatment is carried out.
8. To secure the home's co-operation in the building of desirable eye hygiene and health habits.
9. To aid the child to adjust sufficiently well to enter an adjusted high school program or to get and maintain a job.

In order to better carry out our purposes, studies of the physical well-being of the children are being made by the classroom teacher, health teacher, and school nurse. Studies of social and emotional well-being will follow.

Special Equipment for Sight-Saving Class

Our sight-saving classrooms are located with an eastern exposure, walls are painted light buff and ceiling a light cream. They are fitted with higher watt bulbs than the regular grade room, and one room has been fitted with a photo-electric cell which controls the lighting. The cell is located in the darkest corner and may be set for a certain amount of candlelight power. If the

amount of light is less or greater, the lights are automatically turned on and off.

The pupils' desks are adjustable and movable. Large clear-type books, large outlined maps, unglazed buff paper, large pencils, and heavy soft crayons are some of the children's tools. Bulletin size typewriters are provided on which the intermediate and advanced pupils may prepare their work, thereby relieving eyestrain.

In this brief report there is not time to tell you of the home visits, of teacher-parent contacts, and of the problems of educational, recreational, and vocational guidance.

As we look toward the future in Rochester, those of us who are engaged in sight-saving class work desire to strive toward the following goals:

1. To take care in sight-saving classes of all the children of school age in our community who need such special eye care.
2. To assist the grade teacher in making adjustments for the borderline case with a less serious vision handicap.
3. To keep abreast of new developments, to challenge our sight-saving class program, and to make any necessary changes and improvements.
4. To develop a better knowledge of the place these pupils may have in industry and to plan co-operatively with the family and the Rehabilitation Bureau for the individual pupil when he leaves school.
5. To develop a better understanding and appreciation of the social adjustments these pupils must make, of what their leisure time activities may be, and of the possibilities for placing them in contact with normal group activities.
6. To encourage and promote eye hygiene and preventive measures which will, in time, reduce the number of eye conditions and diseases which today require remedial and special educational attention.

With an awareness of the needs that these goals imply, the school welcomes the counsel and co-operation of any agency or any individual in the community who can help it to see its job more clearly and to carry that job out more effectively.

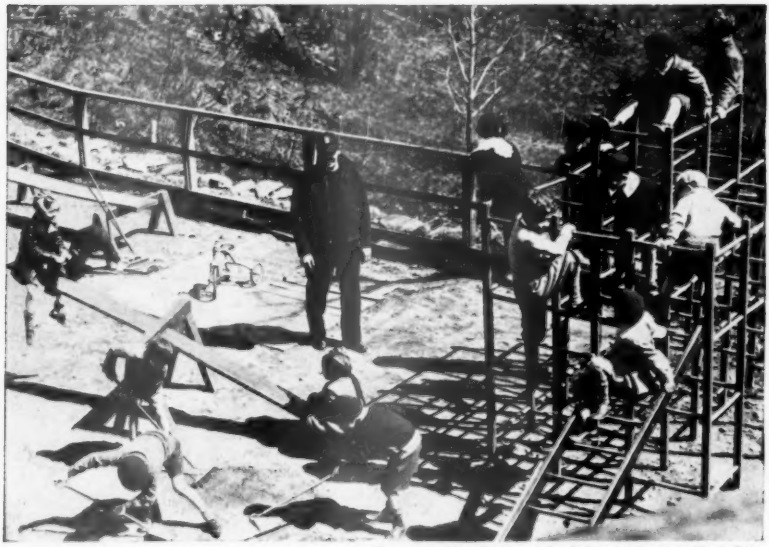
Safeguarding the Eyes of Children

A Pictorial Review

THE SIGHT-SAVING REVIEW presents in pictorial form one of the many aspects of sight conservation. Subsequent issues will contain other topics in illustrated form. The National Society for the Prevention of Blindness offers, for loan, slides and photographs on these subjects.

Photo by Doris Day

Safe and sound



Courtesy of the Cottage School, Riverdale, New York City

Safe play under adult supervision

At Play

Scissors
are dangerous
playthings

Fireworks are not safe for children

On July Fourth

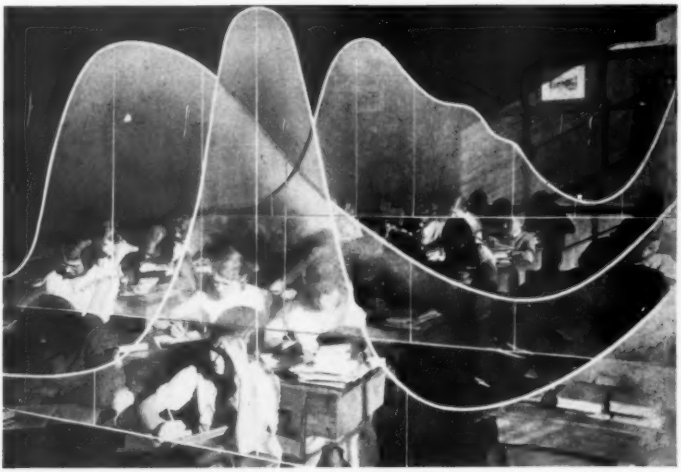
Bang!
Will another
eye be lost?

Proper reading posture

At Home

Wrong reading position

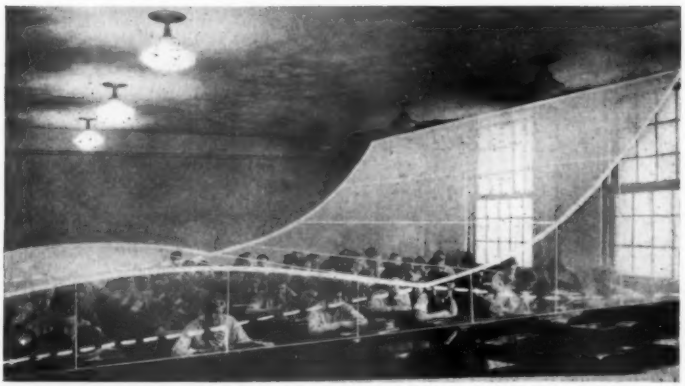
Courtesy Eastman Teaching Films



Uncontrolled direct sunlight
causes eye distress

At School

Properly supplementing daylight with
artificial light relieves glare



Courtesy General Electric

Courtesy Commonwealth Edison Company

Good set-up for a sight-saving class

In Sight-Saving Class

Correct desk and posture

Note and Comment

Plans for National Society Annual Conference.—Columbus, Ohio, will be the scene of the Annual Conference of the National Society for the Prevention of Blindness, December 3, 4 and 5. Ohio agencies are assisting in planning the program and are making available their facilities to visiting delegates.

Thus far the following topics have been designated for the program: Eye Hazards in Industrial Occupations; Eye Health in Relation to Social Work; Eye Health Problems of College Students; The Nurse's Approach to Eye Health; Responsibilities of Teacher Training Institutions for Eye Health; and Sight-Saving Classes.

A forum meeting will present the subject of Rehabilitation versus Relief, and a dinner meeting in co-operation with the Columbus Academy of Medicine is planned.

Exhibits, motion pictures and slides will be presented during the Conference, and opportunities for personal interviews with members of the staff will be afforded. Copies of the complete program will be available upon request after November 15.

Conjunctivitis Can Be Prevented.—Speaking before the General Assembly of the International Association for the Prevention of Blindness and of the International Organization against Trachoma last spring, N. Bishop Harman, ophthalmic surgeon, presented the subject of conjunctivitis in children. He corroborated the opinion of many public health and ophthalmic physicians that conjunctivitis occurs more frequently among the poor and over-crowded than among the economically secure; that it occurs more frequently in the dry, sunny months from April through June than at any other time; that it is more frequent in childhood than youth, in youth than in age, and finally that it is more frequent among females than males. Harmon based his findings upon three sources of evidence: (1) a large ophthalmic hospital; (2) a children's hospital; and (3) London elementary schools. He expressed his conviction that conjunctivitis, even in the most chronic form

of trachoma, can be controlled, and that such control is practical. He cited as an example of prevention and treatment the experience of the Labour Corps in France during the Great War. "Trachoma was rife amongst the coolies. The steps taken to remedy matters were three: (1) instructions were given that no labourers with trachoma should be recruited from abroad; (2) affected men were segregated; (3) treatment was given both to the affected and the 'clean.' The latter received zinc drops and their towels were sterilized regularly. By these means the disease was held in check, and it did not spread to the French population or the British troops."

Vision Testing Among School Children in Japan.—The regular correspondent of the American Medical Association in Japan presented the following interesting note in a recent issue of the *Journal of the A. M. A.* on the findings of vision testing among school children in Tokyo: "Not until 1932 did the Tokyo municipal officials, for the first time, undertake to investigate the vision of school children. In the following year the first eyesight class was attached to a certain primary school on a small scale. The so-called poor vision in this country means vision that cannot be improved by any glasses. The Ophthalmic Association of Japan has defined it as follows: Children with poor vision of low degree are those who cannot see clearly even with the aid of glasses, the 0.3 in the international vision test chart, while children with a higher degree are those who can barely discern figures 1 meter distant. They are divided into two classes, A and B. Class A contains those who, with glasses, cannot clearly see the 0.3 in the international chart and can discern figures 2 meters distant. Class B. includes those who, with the aid of glasses, cannot discern figures 2 meters distant. The Education Office ordered the local government to examine the vision of school children throughout the country last year. Among 3,740,215 boys and 3,625,813 girls examined, they found 4,797 boys (1.25 per thousand) and 5,237 girls (1.44 per thousand) with poor vision. These figures contain 4,258 boys of class A and 4,765 girls of class B. The number of children who were allowed to postpone entering the primary school on account of poor vision was 114, 47 of whom were boys and 67

girls. The number with poor vision increases as the school year advances. There are, for instance, in the sixth year class, which is the highest grade in the first primary course, more than three times as many with poor vision as in the first year class. Generally speaking, there are more weak-sighted girls than boys. The causes of poor vision are, first, those of hereditary nature; then comes trachoma, then nearsightedness of high degree, and finally physical weakness. Several classes for poor children with defective vision are to be established in Tokyo and in other great cities in the near future."

Ophthalmological Research in U.S.S.R.—The recent report of the Second All Union Congress of Eye Physicians of Russia, held in Leningrad from June 25 to 29, indicates major scientific advances in Russia. According to Professor M. J. Auerbach, the number of eye physicians in Russia has been increased from a few hundred to 3,000 in the past ten years. Notable among the achievements of the ophthalmologists is the founding of the Central Institute of Clinical and Experimental Ophthalmology which co-ordinates and directs all the work in this field in Russia.

Is Corneal Grafting Practical?—According to Professor V. P. Filatov, Director of the Odessa Institute of Experimental Ophthalmology, it is possible to transplant corneas obtained from the eyes of living people for use in cases of blindness due to leucoma. In addition, it is possible to obtain good results by the use of eyes removed from corpses, not only immediately after death, but several hours later, provided the eyes intended for transplanting are kept in a cool temperature. In 95 attempts to transplant corneas from corpses, Professor Filatov has had 18 cases in which the cornea remained alive and transparent. Eleven of the 18 successful cases were lost track of after a year to two years and four months. Some of the patients had their sight restored sufficiently to be able to work.

Children's Fund of Michigan.—In pursuance of the purposes for which the Children's Fund of Michigan was organized, it has included in its activities the correction of visual defects and reports that such activity was continued as one of the efforts of the Fund

throughout the year. It maintains two traveling oculists who have examined the eyes and prescribed corrective glasses for more than 5,500 children in 12 counties and two of the district health units. Among the studies which are pursued under this fund is one on impaired vision of children and its relation to a Vitamin A deficient diet.

Massachusetts Approves Prophylaxis for Ophthalmia Neonatorum.—The following treatment of the eyes of infants at birth has been outlined by the Commissioner of Public Health of Massachusetts: "A one per cent filtered solution of silver nitrate, U.S.P., in distilled water, stored in ampules for single use, the ampules to be protected against penetration of light and provided that if the ampule must be broken, it shall not be made of glass or other shatterable material which might cause injury to the eye, and further provided that the ampule or its container shall bear an expiration date which shall not be later than six months after the date of preparation of the solution and that no solution shall be used after said date of expiration."

Under recent provisions no prophylactic for the treatment of the eyes of infants at birth may be used which is not furnished or approved by the Department of Public Health which recommends the following procedure:

1. Every pregnant woman concerning whom there is the least suspicion of gonococcal infection should be so treated for the infection, both during pregnancy and at delivery, that the birth canal may be as free as possible from the gonococcus during the birth of the baby.
2. The following order of procedure is recommended for the use of the prophylactic in the baby's eyes:
   a. Clean the skin of the four eyelids with cotton pledgets moistened in boric acid solution, using separate pledgets for each eye.
   b. Thoroughly irrigate the conjunctival sac of each eye with boric acid solution, using a sterile soft rubber ear syringe.
   c. Retract the eyelids, digitally, and instill one drop of a one per cent solution of silver nitrate into each eye, preferably near the outer canthus, and allow the solution to remain in contact with the conjunctiva for at least two minutes.

d. Irrigate the conjunctival sac of each eye with sterile normal salt solution to prevent chemical conjunctivitis.
e. Secure the services of an ophthalmologist upon the first appearance of suppurative conjunctivitis and insist upon a bacteriological report on the conjunctival secretions.

3. Precautions: Since corneal abrasions promote ulceration in the presence of the gonococcus, great care must be taken to avoid contact between the cornea and the finger manipulating the eyelids, the irrigating syringe or the eye-dropper, if the above recommended procedure is carried out.

Testing Lighting Systems before Installation.—A news item published in a recent edition of *Science Supplement* describes a model room for the accurate testing of lighting adequacy. This room is now available to architects or builders in the lighting laboratory of the University of Michigan. The apparatus which is the only one of its kind, according to Professor H. H. Higbie, of the department of electrical engineering, will make it possible for architects to see in advance how any lighting system will work. The item in *Science Supplement* says further: "By changing the ways in which light is admitted, and by varying the kinds of paint on the ceiling, floor and walls of the model room, any lighting conditions may be reproduced to solve specific problems of illumination. The accuracy of the apparatus is insured by a complete check before each test is made. Numerous tests in full-size rooms have verified the applicability of the data obtained with this device.

"A photo-electric cell, mounted on a carriage, moves back and forth, so that an accurate survey of the whole room may be made. The current generated in this 'electric eye' is amplified, then recorded by means of an oscillograph. A beam of light, developed in the oscillograph, falls on a moving strip of photographic paper, thus making a graphic record of the trip of the 'electric eye' about the room.

"If it were not for reflections, this complicated apparatus would be unnecessary, since illumination could be calculated by mathematical means. The troublesome reflection difficulty, however, is solved by covering the 'electric eye' with a diffusing glass, which catches light from all angles and transmits it to the photo-electric cell.

"Most of the present tests are conducted with the luminous panel type of lighting, which is now coming into vogue. Permitting almost unlimited variations, as well as efficient illumination, it may readily be incorporated into the decorative scheme."

Devices of Interest to Sight Savers.—*Popular Mechanics Magazine* for October describes several devices of special interest to anyone concerned with eye welfare. One is an antiblinding, nondazzling photo-flash lamp which eliminates eye shock incidental to the taking of pictures. It is described as follows: "The bulb of the lamp is coated with a lacquer colored with a blue dye which permits little glaring yellow light to come through when the lamp flashes. Although this coating reduces the amount of light given off by the lamp, it is said that sufficient blue, violet and ultraviolet light rays pass through to produce a good negative. The inventor claims that a person may be photographed with the new flash lamp without knowing his picture has been taken."

The other device is of special interest in the saving of eyes in industry. "To enforce a safety rule requiring machinists to wear goggles while at work," *Popular Mechanics Magazine* reports, "a Freeport, Ill., manufacturer devised a novel switch. When the goggles are not in use, they rest on a tray balanced above the plunger of a sensitive electric switch connected to the motor of the grinding machine. As long as the goggles are on the tray, their weight is sufficient to depress the plunger and cut off the grinder motor. The operator can not go to work until he picks up his goggles, allowing the circuit to be completed and starting the motor."

Union of Counties Associations for the Blind.—In accordance with two of the objects of the Union of Counties Associations for the Blind in England and Wales, namely, in every way to assist research into the welfare of the blind and into the causes and prevention of blindness, and to co-operate with organizations working for the blind and for the prevention of blindness throughout the world, the Annual Report for 1935–36 gives a résumé of the activities of the Prevention of Blindness Committee and also mentions the Report of the Committee of Enquiry into problems relating to Partially Sighted Children which was the subject of a Symposium

at the Annual Meeting in June, 1935. Tables of statistics supplied by the constituent Counties Associations and tables showing the totals for the whole country, as well as a map indicating the areas of the seven Counties Association, are bound up with the Report.

Change in Canib News Sheet.—A change of policy was announced by the Canadian National Institute for the Blind, in a recent issue of the *Canib News Sheet* as follows: "It was decided at the conference of Institute superintendents that much of the matter contained in the *News Sheet* must be of little interest to members of boards and committees and that the circulation of the publication should be largely confined to staff members. The size of the publication will also be considerably curtailed. To compensate those who might feel that they were being deprived of an avenue of information which kept them in touch with Institute activities, it was decided that those who are now on the mailing list of the *Canib News Sheet* and who are not staff members, would be transferred to the mailing list of *The National News of the Blind*. This quarterly, originally designed for circulation amongst blind people, contains news of direct interest to those without their sight and it was thought that the material contained in it would be of much more information to those interested in the welfare of the blind than the routine official news which occupied so much space in the *News Sheet*."

Institute on Conservation of the Eyesight of School Children.—The Illinois Society for the Prevention of Blindness presented this Institute, which was endorsed by Dr. Frank J. Jirka, Director of Public Health, and John A. Wieland, Director of Public Instruction, on August 31, September 1, 2 and 3. The course was limited to sixty members, preference being given to registered public health nurses engaged in school work, and no charge was made.

One Hundred Third Annual Report.—Olin H. Burritt, Principal of the Pennsylvania Institution for the Instruction of the Blind, reports for 1934–1935 on the studies and many extra-curricula activities of the Institution's pupils, among whom is included one deaf-blind lad. "Every available place in the school is filled and there is a small waiting list."

Our Stone-Age Eyes.—The editorial page of the September issue of the *American Boy* is devoted to a series of short articles explaining why our eyes need more attention than those of the Stone-Age men. The printing press and the use of artificial light have caused many of our eye troubles and while we wouldn't be without either, the editor suggests that we insist on adequate lighting, especially for fine print, and tells of other ways in which we can help our eyes to meet the heavy demand made on them in the modern world.

Special Institutes for the Prevention of Blindness.—The Pennsylvania Association for the Blind, Inc., calls special attention in *The Seer* to the fact that Miss Evelyn M. Carpenter is now in charge of the Prevention of Blindness Department of the Association's Philadelphia Branch, with some 25 or 30 per cent of her time assigned to the Association at large for the conduct of special institutes and other professional activities incident to state-wide work for the prevention of blindness and conservation of vision.

Crossed Eyes Are Straightened.—Outstanding among the Lions Clubs which are doing such excellent work among children with defective vision is the Raleigh, N. C., club, which examined 88 children during the past year and provided 77 of them with glasses. Since 1927, when the club entered on this activity, Dr. G. C. Hodgens has examined the eyes of more than 300 children for the club.

National Society Notes.—Following his participation as lecturer in the various summer courses for the training of sight-saving class teachers and supervisors, Mr. Lewis H. Carris, managing director, spent some time in Columbus, Ohio, to discuss arrangements for the annual conference of the National Society, which will be held there on December 3, 4 and 5. He also attended the 1936 Conference of the Mobilization for Human Needs in Washington, D. C.

The summer course for the training of sight-saving class teachers and supervisors, given at Teachers College, Columbia University, and directed by Mrs. Winifred Hathaway, associate director, had an enrollment of 29 students.

Among the colleges recently requesting the services of Dr. Anette M. Phelan, staff associate in education, were the National College of Education in Evanston, Illinois, Syracuse University, and Teachers College, Columbia University. Dr. Phelan also visited the universities of Kentucky, Chicago, Minnesota, Illinois and Normal University in Normal, Illinois, throughout the summer months for conferences on various eye health problems.

Returning from her attendance at the Biennial Nursing Convention in California, Mrs. Francia Baird Crocker, associate for nursing activities, spent time in Oregon and Washington, presenting the subject of sight conservation before selected groups of public health nurses. Included in her program was a series of lectures at the University of Oregon, in Portland, as well as a series at the University of Washington, in Seattle. Individual lectures were presented also before the health officer and county nurses in Salem and Eugene, Oregon, respectively, and before the nurses of King County in Seattle, Washington.

Since the last issue of the REVIEW was published the Society has sustained the loss of two of its most active members, Thomas Beaver Holloway, M.D., and John Lincoln Wilkie. At its meeting on the first day of October, 1936, the Executive Committee resolved to incorporate the following two statements in its minutes:

Thomas Beaver Holloway, M.D., 1872–1936

The Executive Committee of the National Society for the Prevention of Blindness records with sorrow the death of Dr. Thomas B. Holloway, one of the Society's valued friends and counselors. It was the good fortune of the Society to have had his services for six years on the Advisory Committee and for the past four years as a member of the Board of Directors. Dr. Holloway was distinguished not only for his professional achievements in ophthalmology, but also for his deep, active interest in the social movement for the prevention of blindness. Fortunately his teaching opportunities enabled him to impart this broader understanding of the implications of ophthalmology to the practitioners of the future. Merely to list the numerous institutions and professional societies that Dr. Holloway served in positions of responsibility would show the esteem in which he was held by his associates. Chairmanship of an ophthalmological committee appointed by the American Medical Association to co-operate with the National

Society was among these affiliations. In this capacity, Dr. Holloway frequently was instrumental in interpreting the Society's work to the medical profession. Once convinced of the worth of a project he was glad to put it to the test in his practice. When the newly formed Committee on Statistics of the Blind was in need of medical support, his prompt offer to make available for the Committee's first study, the records of the school for the blind for which he was examining ophthalmologist set an example that others were proud to follow. Professionally and personally, the death of Dr. Holloway will be keenly felt.

John Lincoln Wilkie, 1865–1936

From the early stages of the movement which became the National Society for the Prevention of Blindness, Mr. John L. Wilkie was associated with its growth and development. He was a member of the Committee on Prevention of Blindness of the New York Association for the Blind. When the National Committee for the Prevention of Blindness was established he was one of its charter members, was chosen a member of the Board of Directors, and became the organization's trusted adviser on all legal matters. In this capacity he rendered the Society most valuable service, and lent it distinction by his personal and professional connections.

Current Articles of Interest

The Conservation of Vision in the Child, George E. de Schweinitz, M.D., *Pennsylvania Medical Journal*, July, 1936, published monthly by The Medical Society of the State of Pennsylvania, Harrisburg, Pa. The author introduces his essay as one which "will concern itself briefly with various conditions which jeopardize the preservation of children's vision and with their prevention and treatment, with the detection and management of refractive errors in early life, with congenital amblyopia, and with certain ocular muscle anomalies and their consequences." He stresses the point that "successful conservation of vision in children's eyes depends upon the co-operation of the general physician, the pediatrician and the ophthalmologist, and in one highly important condition upon the co-operation of the obstetrician."

Operative Results in Cataracts Coincident with Dinitrophenol Therapy, Hans Barkan, M.D., W. E. Borley, M.D., Max Fine, M.D., and Jerome Bettman, M.D., *California and Western Medicine*, May, 1936, published monthly by the California Medical Association, San Francisco, Calif. "This paper describes the clinical appearance of some of these patients and the results of operations on twenty eyes operated upon for cataracts in this group," say the authors, and in conclusion remark that "the table as presented shows twenty eyes operated upon, but in the last two weeks three more patients with bilateral cataracts have appeared, and four more eyes than are shown in the table have been operated, all without complications. The results shown in the table, and in the additional cases just mentioned, justify a good prognosis as regards re-establishment of useful vision to those afflicted with cataract formation coincident with ingestion of dinitrophenol and loss of weight resulting therefrom."

Some Thoughts on Light and Architecture, Otto Teegen, *Transactions of the Illuminating Engineering Society*, May, 1936, published monthly by the Illuminating Engineering Society, New York, N. Y. The close relationship of architecture, light and color

is discussed. The author cites specific examples of lighting problems in connection with various pieces of modern architecture and concludes that "architecture depends on lighting as one of its principal functional and decorative features, while you (the illuminating engineer) depend on architecture as the source of development in lighting."

Methods of Measuring the Ability to Drive an Automobile, Alvhh R. Lauer, Bulletin 115 of the Engineering Extension Service, Iowa State College, Ames, Iowa. Dr. Lauer believes that a driver's license examination "should do for the driver, in a psychological way, what the medical examination does for a person in a physical way," that is, "should make known to him his condition at the time of the examination with a suggestion of ways and means for improving this condition," and concludes that "in the same way that medicine has increased the life span 25 or 30 years in one generation, the proper application and follow up of driver's examinations will reduce accidents by a considerable amount."

Cod Liver Oil as Local Treatment for External Affections of the Eyes, Edgar Stevenson, *British Journal of Ophthalmology*, July, 1936, published monthly by Geo. Pulman & Sons, Ltd., London, England. The author, as the result of experiments conducted by himself, concludes that cod liver oil applied locally seems to promote growth of the natural tissues and to inhibit growth of scar tissue, in any case where there is loss of substance. It should be withheld in the early stages of hypopyon ulcer. It is harmless, can be used in conjunction with other necessary treatment, is cheap and easily applied.

Fifth Annual Report of the Association for the Prevention of Blindness, Bengal, 1934–35, Calcutta, India. The report tells of the great need for expansion of the Association's activities. Temporary, but avoidable blindness, writes Lt.-Col. E. O'G. Kirwan, Hon. Secretary, creates a terrible amount of unnecessary human suffering. A greater question is that of preventable blindness, for 50 to 60 per cent of blindness is preventable. Apart from cataract and glaucoma, the six important causes of blindness in India are keratomalacia, small-pox, syphilis, gonorrhea, irritant drugs

and trachoma. In addition we have other causes such as leprosy, cholera, neglected corneal ulcers, and conjunctivitis. . . . In India intensive propaganda work is required in our effort to prevent blindness. Money would be better spent in this direction than in establishing institutions for the blind, which, although humane in intention, is beginning at the wrong end. Prevention is always better than cure.

Orthoptic Training and Management of Concomitant Strabismus in Children, Lawrence T. Post, M.D., F.A.C.S., *Texas State Journal of Medicine*, May, 1936, published monthly by the State Medical Association of Texas, Fort Worth, Texas. Professor of Clinical Ophthalmology and Head of the Department at Washington University Medical School, Dr. Post presents "to the average ophthalmologist a practical and rational method of handling children who are brought to him in office or clinic for the correction of crossed eyes."

On The Scientific and Practical Value of Ionization in Ophthalmology. Recent Advances and Researches, Gustav Erlanger, M.D., *British Journal of Ophthalmology*, April, 1936, published monthly by Geo. Pulman and Sons, Ltd., London, England. The author states that the ionization method is of great therapeutic value in most of the common diseases and changes of the eyes and, when used in the uncommon and rare cases, sometimes produces astonishing and very impressive results. If used in the early stage of a disease the restoration of the function is complete. But even in chronic cases the method should be tried since it stops the progress of inflammations and is a great factor in accelerating the resorptive power of the tissues.

Book Reviews

THE EYE AND ITS DISEASES. 82 International Authorities, edited by Conrad Berens, M.D., New York: W. B. Saunders Co., 1936, 1254 p. ill.

This new textbook, representing the work of many American and a few Continental eye specialists, is designed to present the essential eye diseases to the general practitioner and physicians beginning to specialize. The subject matter is well arranged although some of the chapters are too technical to be readily understood by other than specialists. The chapters on the history of ophthalmology, heredity, orthoptic training, hygiene of the eye and the prevention of blindness should be particularly interesting to the readers of the SIGHT-SAVING REVIEW.

While the text lacks evenness, varying between elementary and specialized information, it represents a definite contribution to ophthalmic teaching. For the beginner, every phase of the subject is covered. For the specialist, much data, dormant since the last editions of Fuchs and de Schweinitz, has been collated and brought up to date.

JAMES W. SMITH, M.D., F.A.C.S.

DETACHMENT OF THE RETINA. J. Cole Marshall, M.D., London: Oxford University Press, 1936, 77 p. ill.

In this monograph of 77 pages, the author reviews the various operations which have been used for the relief of patients unfortunately blinded by detachment of the retina. Several of the operative techniques described are no longer used by eye surgeons in this country. The author frankly admits that an ideal operation for detachment is yet to be developed and therefore any text at this time can only be a review of experiences of world-wide authorities to date.

JAMES W. SMITH, M.D., F.A.C.S.

Current Publications on Sight Conservation

Note.—The National Society for the Prevention of Blindness presents the most recent additions to its stock of publications. Except for the more expensive ones, single copies are sent free upon request. Unless otherwise specified, they are reprinted from *The Sight-Saving Review.* New publications will be announced quarterly.

209. Cosmetics Detrimental to Vision, Walter I. Lillie, M.D. 8 p. 5 cts. The increasing number of eye tragedies occurring as a result of the indiscriminate use of weight reducers, hair dyes and depilatories presents a problem to the doctor, the law and the public, as well as to the beautician.

210. Sight Conservation as an Educational Problem, Richard S. French, Ph.D. 8 p. 5 cts. More than ever, educators are using motion pictures, slides and other visual aids in carrying out their work. This trend alone necessitates an added interest in a school eye health program.

211. Eye Conditions Prevalent in Early Adult Life, Wm. F. C. Steinbugler, M.D. 16 p. 10 cts. The author outlines the symptoms and treatment of those eye conditions which usually appear between the twentieth and fortieth years of life.

212. Occupational Adjustment of the Visually Handicapped, Eleanor Brown Merrill. 6 p. 5 cts. In considering how best to help in getting the right work for the visually handicapped, it is necessary to draw on the experience of rehabilitation and employment service, hospital social service, occupational therapy, work for the blind, industry, education and vocational training.

213. The Cross-Eyed Child, Brittain F. Payne, M.D. 8 p. 5 cts. For the proper correction of cross-eyes, the efforts of the oculist, general practitioner, parent and teacher are required to get the necessary co-operation of the child.

214. Conserving the Vision of Deaf and Hard-of-Hearing Children, Mary May Wyman. 8 p. 5 cts. The author points out the precautions necessary for the conservation of vision of those children handicapped by deafness or hardness of hearing.

215. Education for the Visually Handicapped, Christine P. Ingram. 8 p. 5 cts. Presenting the aims, purposes, equipment and standards for a sight-saving class, the author describes some specific experiences in the Rochester, New York, classes of which she is the supervisor.

216. Safeguarding the Eyes of Children. 8 p. ill. 5 cts. Photographs which illustrate the hazards to which the eyes of children are exposed.

D90. Why Don't We Stamp Out Syphilis? Thomas Parran, M.D. Reprinted from *Readers' Digest,* July, 1936. 12 p. ill. Stresses the importance of wiping out this plague and suggests what must be done to accomplish it.

D91. Cataracts, Abram B. Bruner, M.D. Reprinted from *Hygeia,* July, 1936. 1 p. ill. The author points out facts and fallacies concerning cataracts.

D92. Wearing Glasses, Walter B. Lancaster, M.D. 24 p. ill. 10 cts. Published by the American Medical Association. Reasons for wearing glasses, common mistakes in the way they are worn, and suggestions for their care.

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